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OF THE

OKLAHOMA STATE MEDICAL ASSOCIATION

VOLUME XXX McALESTER, OKLAHOMA, JUNE, 1937 Number 6

Published Monthly at McAlester, Oklahoma, under direction of the Council.

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The Incidence of Syphilis Complicating Pregnancy*

L. G. NEAL, M.D.
PONCA CITY

I am sure with the introduction of this question as a topic of a paper, a great many will feel that I, in company with a number of men who like to take to the easy green pastures of prenatal discussion, have done so again.

In writing a paper for an occasion like this, however, I hope to treat as lightly as is possible all the prenatal field as a field, and I would like to bring to you a message that is highly important. It would seem to me at the outset that one of the initial steps in the conduct of an obstetrical case would be to establish the following facts: evidence of pregnancy, ability of the expectant to deliver a child, and third that the patient is free of diseases that concurrently might complicate her expectancy. That is to say, such things as tuberculosis, diabetes, mal-formation and syphilis. It is not a difficult thing to establish the positive or negative Wasserman of a case, especially in a state where the laboratory facilities are available as they are available in Oklahoma; where the laity has become so familiar with syphilis as a disease entity and with the terrific ravages that follow syphilitic involvement. Ultimately that there is such a subject as congenital syphilis admittedly discussed and read about and all too frequently seen, it becomes manifestly an indictment against the indifference and laxity of the so-called obstetrician. So this is not a treatise of the prenatal field *per se* but a singling out of one of the more important fields of medical activity that the isolation of the causative factor of syphilis something like a quarter of a century ago has made possible to the betterment of mankind and to the elevation of that division of medicine called obstetrics.

It will be my purpose, first, to discuss the findings of the *American Social Hygiene Association* on syphilis in pregnancy which resulted from a set of questions sent to the leading clinics that have to do with obstetrics in this country. I will not attempt a report in full, but will brief some of their findings. Again this paper will make no attempt to deal with the treatment of lues, when and if found, but will reflect the general laxity of highly reputable clinics of obstetrics.

While the congenital form of syphilis presents the most tragic and destructive aspect of the disease and the one most resistant to treatment, it is now well known that it is in many ways the most easily preventable. An abundance of experience has shown that if the syphilitic pregnant woman can be brought under modern treatment early in pregnancy and treatment continued through pregnancy, the transmission of the disease to the child can be prevented in almost all cases; that in women brought under treatment by the middle of pregnancy about ninety-five per

*Read before the Section on Obstetrics and Pediatrics, Oklahoma State Medical Association, Annual Meeting, Tulsa, May 12, 1937.

cent of the offspring will be protected, and that even treatment begun any time after the middle of pregnancy still serves to protect a surprising proportion of children from infection before birth. The fact that, by timely treatment of the syphilitic pregnant woman, one can with reasonable certainty assure the birth of healthy children from mothers still syphilitic is surely one of the most striking achievements of preventive medicine. If the means of prevention in the physician's hands could be generally applied, congenital syphilis could be quickly eradicated.

The crux of the matter lies in early diagnosis and treatment. Clinical evidence alone is extremely unreliable, since during most of the course of syphilis no clinical evidence of its presence appears, and this is particularly true in pregnancy because pregnancy itself tends to repress clinical manifestations. A very large measure of reliance for diagnosis, however, may be placed in serologic tests. While it is true that in a small proportion of cases in which the blood test is negative the mother may infect the child, repeated blood tests, made on suspicion of the disease, will reveal most of these cases also.

The virtual eradication of congenital syphilis becomes possible by making a blood test early on every pregnant woman and bringing the positive cases under early treatment. As a measure of progress toward this desired end the question becomes important as to how generally the blood test has been adopted as a routine procedure in obstetric practice.

For several years fairly reliable and impressive data have been available as to the prevalence of syphilis among women who attend public clinics but almost no data as to its occurrence among women in private obstetric practice. The *American Social Hygiene Association* undertook to secure data as to the use of blood tests for syphilis and subsequent treatment both among antepartum clinics and in the private practice of obstetricians.

SEROLOGIC TESTS IN ANTEPARTUM CLINICS

A questionnaire was sent to representative antepartum clinics in all parts of the United States. Replies giving data requested were received from two hundred sixty-eight clinics. The questions and a digest of the replies to them are presented herewith:

Question 1. How many antepartum cases were registered for care in your clinic in 1934?

The clinics were requested so far as possible to make report for a period of three or four years; hence some reports for one year only, others for two to four years. The total number of antepartum cases included in the study was 219,659.

Question 2. Do you make a blood test for syphilis as a routine in all antepartum cases? If not, what is your practice in the matter?

Of the two hundred sixty-eight clinics, two hundred fifty (ninety-three per cent) report making blood tests as a routine procedure, and eighteen clinics not as a routine but only on "indication." This presents a very encouraging outlook so far as antepartum clinics are concerned. Rapid progress has been made in very recent years in the adoption of the practice of making blood tests as a routine. A large number of clinics report having begun this practice within the past two years. The progress made in this matter is suggested by comparison with a study of antepartum clinics made in 1925 by a committee of the *Medical Women's National Association* in cooperation with the *American Social Hygiene Association*, in which only forty-two per cent of thirty-seven clinics scattered throughout the United States reported making blood tests for syphilis as a routine, as compared to ninety-three per cent in the present study. It can be said that no antepartum clinic can any longer be looked on as being in line with modern ideas and practice which fails to make blood tests as a routine on all pregnant women who attend.

Question 3. In your antepartum clinic, what proportion of cases have been found syphilitic, (a) white, (b) Negro?

A report for a number of years would be appreciated. Unfortunately a large proportion of the clinics failed to indicate whether the report was for white or Negro patients or both. A surprisingly large number stated that no distinction as to race is made in their records.

Seventy-four of the clinics indicate that they report for white patients only. These embrace a total of 62,516 patients. Of these 3,783 were found positive, this being about six per cent.

Only eleven clinics indicate they are reporting for Negro patients only. These include a total of one thousand seven hundred eight cases, of which three hundred eight, or eighteen per cent, are reported positive. This means that among Negro cases in this group, three times as many were found syphilitic as among the white patients.

Fifty-nine clinics state that they are reporting for both white and Negro patients but do not give the respective numbers. These embrace a total of 44,855 cases. Of these, 2460, or 5.5 per cent, were found positive. This comparatively low rate is doubtlessly accounted for by the fact that in some of these clinics only a very small proportion of Negro cases are included; hence the positive percentage approaches so nearly that of the white group reported.

Sixty-four of the clinics report the respective percentages of white and Negro positive cases without giving the numbers from which the percentages are derived. This enables us to make the sample comparisons of syphilis rates among white and Negro patients given in Table 1. I will not attempt to give the full table designated No. 1, but of twenty-two clinics giving a return specific in racial division the white gave an index of 2.42 per cent and the colored race 10.5 per cent.

In only two per cent of clinics is the white syphilis rate over twelve per cent, whereas for Negroes the syphilis rate is more than twelve per cent in forty-eight per cent of the clinics. In eighty-nine per cent of the clinics the syphilis rate for white patients is not over five per cent.

Question 4. If possible, please report what proportion of women came to the clinic before the middle of pregnancy, and how many after.

One hundred and forty-two clinics report on the question. The results show less than twenty per cent, eleven clinics; from twenty to twenty-nine per cent, sixteen clinics; from thirty to thirty-nine per cent, twenty-nine clinics; from forty to forty-nine per cent, twenty-four clinics; from fifty to fifty-nine per cent, thirty clincs; from sixty to sixty-nine per cent, fifteen clinics.

This question is important in view of the urgency that syphilitic pregnant women come under treatment not later than the middle of the period of pregnancy. It is encouraging to note that, of the one-hundred forty-two clinics reporting on this question, sixty-two, or forty-four per cent, are able to report that fifty per cent or more of the patients register by the middle of pregnancy. At the same time it shows how far we still are from our ultimate goal in this matter. It calls for more and more persistent education of the general public, especially the women, to secure their needed cooperation in this aspect of public health.

Question No. 5 has to do with treatment of the luetic cases found and will be of no interest to us here except I would venture the opinion that very close cooperation between the obstetrician and the treatment should obtain and probably the end result would justify the treatment being conducted in the obstetrical clinic.

Question No. 6. If you can give data as to the percentage of cases in which treatment of the woman proved protective for the child, based on a given period of observation and serologic tests, it will be of great value.

The questionnaire returns as a whole, and the answers to this last question in particular, reveal an astonishing lack of system and thoroughness in the recording of data and in studying and analyzing the results of treatment. In a large proportion of the clinics no racial distinction in the records is made, no records of the percentage of cases positive for syphilis, no accurate data as to the period of pregnancy in which patients come to the clinic and none as to when treatment was begun, and no record of results of treatment in terms of follow up of the children born.

In the matter of following cases with observation and serologic tests for a reasonable period particularly, this study shows urgent need of improvement. For the most part one might assume from the answers to this question that no concern

for the child is manifested beyond birth or a few weeks after birth. Of the two hundred sixty-eight clinics, only twenty-one hazard any answer to the question at all and many of these obviously are only guesses. Only three clinics indicate results based on a stated plan and period of follow up of infants. The answers of the twenty-one clinics to this question were as follows in part only.

1. Ninety-nine per cent protected for six months.
2. Negative Wassermann reactions in ninety-five per cent.
3. All negative babies.
4. In fully treated cases one hundred per cent are protected. We follow up every three months. Based on results of a year's survey in 1930, cases being considered "treated" if the mother had had any antisyphilitic treatment at all no matter how inadequate, we have the following results: Good (normal baby at two weeks) treated, eighty-eight per cent; untreated, forty-eight per cent. Bad (premature, stillbirth, neonatal death, stigmas): treated, twelve per cent; untreated, fifty-two per cent.
5. Twenty-one cases followed with blood tests for eleven months. Twenty-five out of twenty-six negative and completely healthy.
6. Treatment begun up to three months, ninety-five per cent protected. Treatment begun from three to six months, seventy per cent protected. Treatment begun from six to nine months, forty per cent protected.
7. One hundred per cent in those treated early.
8. One hundred per cent in first half of pregnancy.
9. One hundred per cent before five months.
10. Ninety-five per cent of those treated before six months.

On the whole this study indicates encouraging progress toward the prevention of congenital syphilis through the routine use of the serologic test of pregnant women. It emphasizes the need of more persistent effort to secure early diagnosis and early treatment. It indicates also the urgent need of more adequate record keeping and particularly of longer and more thorough follow up of children born of syphilitic women, and scientific analysis of the results of treatment in the light of extended observation and tests.

And now I would like to discuss briefly the status of the private patient with regards to the incident of lues in obstetrics. Since there is small opportunity to evaluate percentages of lues in private practice except by following further this report of the *American Social Hygiene Association,* I will brief some of their findings in the field of private practice.

Two hundred fifty private physicians—members of the *American Association of Obstetricians* or of the *New England Obstetrical and Gynecological Society,* give results briefly as follows—and I am sure you will agree that they should be more than representative of good obstetrics in this country:

Question No. 1. Do you now or have you ever for a considerable period made blood tests for syphilis as a routine on all pregnant women in your care as private cases?

Forty-two, or fifty-one per cent, answered "Yes." Forty, or forty-nine per cent, answered "No."

This is a much more favorable showing than our general impressions had led us to anticipate. It is encouraging not only in that at this time more than half of the physicians reporting are making the use of the blood test a routine practice but also in that the practice in most cases has been adhered to for a considerable period of years, ranging from one to seventeen years, the average being eight and one-half years.

Question No. 2. If so, what percentage of positive diagnoses has been made?

The thirty-seven replies to this question range from 0.0 to 3.5 per cent (Table 3).

Three additional physicians reply respectively "one case," "one in sixteen cases," and "one this year."

It is seen that in one group of seventeen physicians the positive cases range from

0.0 to 0.6 per cent, and among another group of twenty physicians, more than half of the total, the positive cases range from one to 3.5 per cent. Surely this reported range of the prevalence of syphilis in private obstetric practice abundantly justifies and suggests the urgency of the routine use of the serologic test. This receives support from the fact that for the most part of the physicians who report the low percentage of positives are just as emphatic as to the importance of the routine test as are those who report the higher percentage. One physician has made the blood test as a routine procedure for twelve years, although in nine years and one hundred ninety-seven cases he has had no positives. Another physician has made the blood test as a routine since 1925, although in the four hundred fifty cases cared for he has had no positives. One physician has made the blood test as a routine for five years, although in one thousand cases he has had only one positive. This is in line with a statement by Moore of Johns Hopkins, granting that in private practice one may have to make two hundred tests to get one positive, but insisting that if the rate were one in one thousand it would be abundantly worth while. One physician has made the test as a routine for fifteen years, during which in 4,955 cases he has had 0.6 per cent positive.

Question No. 3. Do you consider it generally feasible to make blood tests as a routine in private obstetric practice. If not, why not?

Fifty-five physicians answered "Yes;" twenty-six answered "No;" six made a qualifying comment. It is significant that the great majority of these obstetricians regard the routine blood test in private practice as feasible, including sixteen physicians who are not as yet doing so.

The following are samples of replies made to the feasibility of routine Wasserman in private practice.

1. "Yes, not only feasible but imperative."
2. "Absolutely, yes."
3. "Yes, if the health department will make tests without charge and patients are educated as to the value of prenatal care."
4. "Yes, the patients rather welcome the report. Only one has objected in one thousand cases."
5. "Yes, there is no objection on the part of my patients."
6. "Yes, there is as a rule very little objection."
7. "Yes, and I should say of great value, and there is very little trouble or expense attached to the examinations, as the health department does the work."
8. "Yes, absolutely. No explanation is made except that I wish to take some blood for examination."
9. "Yes, not only feasible but patients expect and often demand it." Which experience I have also had several times.

The following are samples of negative replies made:

1. "No, because of lack of laboratory facilities and extra cost to patients." (Pittsburgh.)
2. "No, because of lack of proper education on this point, less than fifty per cent of private patients will submit to a Wasserman test."
3. "No, because intelligent people of this type do not marry if conscious of an infection." (Comment: Half the people who have syphilis do not know they have it.)
4. "No, because of type of patients under my care and low incidence of syphilis in the community."
5. "No, because of expense."
6. "No, patients object to added expense."
7. "No, the patients will object and feel that suspicion is being cast upon their character.

It seems obvious that the frequently recurring objections on the ground of added expense have little or no sound basis, as free serologic service by the city or state health departments is available in almost all cities and states.

It seems too that hesitancy to make the blood test on the ground that patients will object is based on fearful surmise rather than on actual experience with the practice. In this study not a single instance is

stated in which a physician undertook to make blood tests as a routine and was obliged to give it up because the patients objected. As is indicated by some of the doctors, blood examinations are made for a variety of purposes and the exact reason for taking blood is not always, and need not be, made known to the patient.

Question No. 4. If it is possible to give the number of cases involved in your data, it will be helpful.

Twenty-four of the doctors report the number of patients involved in their report. The numbers range from fifty to 4,955. The average number per physician is 1,271. The numbers are sufficiently large to render the reports distinctly significant.

This study seems to show an encouraging trend with reference to the role of the private physician in the prevention of congenital syphilis. It is to be noted, however, that considerable reluctance to employ the routine use of the blood test on pregnant women still exists among private practitioners. In view of the strategic position of the private physician in this aspect of syphilis control, it is to be hoped that the practice and experience of the majority of the physicians here reporting will encourage many more hesitating ones to adopt the rule "a blood test early for every pregnant woman."

And now in conclusion I would like to say that many of you will have already thought that Shakespeare was probably correct in his titled play "Much Ado About Nothing." In other words I might in a much quicker way have said a "Wasserman for every pregnant woman," and have done with it. I dare say many of us will return to our practice and continue to do Wassermans when indicated and a great many children will continue to be delivered to face life with an overwhelming handicap. The great imitator, syphilis, has never been easy to detect. Many of its usual signs are recessive during pregnancy and since the best curative results are in the early months of pregnancy, let us lend ourselves to the purpose of early diagnosis and treatment, and in so doing bring about a lessening in the amazing high incidence of syphilis complications in pregnancy.

—o—

Some Observations on the Serological Diagnosis of Syphilis*

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Since there has been so much discussion of late on the subject of syphilis both in the lay and medical press, I think it would be in order to consider some clinical observations on the serological diagnosis of this disease. The subject is one of great importance because of the widespread distribution of this infection; and the many difficulties which beset its diagnosis are brought to mind when we consider its chronic and concealed stages, as well as the acute, treated and atypical cases. A review of the literature on this subject is most interesting but its volume is prohibitive of the undertaking. The complement-fixation reaction in syphilis was discovered in 1906 by Wassermann, Neisser and Bruch and since that time has undergone many changes both in the theory of its action and in its technical details. Since this paper has to do with clinical observations, I shall not attempt to discuss the technical mechanisms of the tests but will consider it only in its relation to diagnosis. The success of this method of diagnosis is dependent upon the interaction of the causative organism and the host, hence it would seem logical to review briefly the basic pathology of the disease.

When the spirochete enters the body

*Chairman's Address, Section on Dermatology and Radiology, Oklahoma State Medical Association Annual Meeting, Tulsa, May 11, 1937.

what happens? A full answer is yet speculative. It is known, however, that the disease becomes systemic almost immediately; the chancre appears, the spirochetes flourish in this localized haven and the local Wassermann reaction becomes positive early, to be followed soon by the positive reaction of the blood. The chancre begins spontaneously to heal, due presumably to the localized hyper-activity of the disease process or a localized increase in the mechanism of immunity. This soon is followed by the florid secondaries which exemplify the height of syphilitic activity. In a short time these fade and the long latent phase of the infection is soon to begin. The possibility of serological diagnosis is present from the early part of this disease process on through.

The complement-fixation reaction in syphilis is not a biologically specific reaction since the "reagin" or so-called Wassermann substance occurring in the serum and spinal fluid of syphilitics is capable of flocculating the lipoids of any normal tissue. Practically, however, this reaction is specific for syphilis in those places where frambesia, yaws or trypanosomiasis are rare or unknown. It may be assumed then since these diseases are rare or never seen in this country that it is possible to render this test specific. There have been many extravagent claims and much untruth put forth under the guise of the "Wassermann reaction" but, in spite of all this, there must be something of real value in the Wassermann reaction and the serological diagnosis of syphilis for it to have withstood the test of thirty-one years of time and today remain the most valuable laboratory aid known to medicine. One of the earliest questions to face the clinician in this respect was whether there were other diseases than syphilis and yaws that were capable of producing a true biologically positive Wassermann. Many leading writers are of the opinion that this is possible and frequently occurs. Some of the diseases named are: leprosy, tuberculosis, acute exanthemata, pneumonia, relapsing fever, pernicious anemia, malaria, pregnancy and the systemic mycotic infections. It has been my observation that this is a very much over-emphasized phase of the problem and I feel that with the exception of the diseases named that have a close biological relationship to the organism of this disease, the positive reactions are due either to syphilis or to technical error. It is to be remembered that syphilis is a concealed and latent disease and in any study of the specificity of the Wassermann and other serum tests for syphilis where the disease is not clinically manifest some truly positive reactions are to be expected. Then before any non-syphilitic disease can be considered to yield a positive reaction the incidence must be above the average level of syphilis as determined by an adequate number of controls taken from the same social group. Much data is to be had as to numbers and percentages of positive reactions in this respect but their wide variation only condemns their accuracy. This phase of the subject is of prime importance and I think it is a safe clinical rule to consider it a truth that non-specific or false positive reactions are due to technical error rather than to unavoidable biological factors in non-syphilitic disease. Each such case should be studied and restudied with much care for possible concealed syphilis. Not only should the clinician give his attention to this aspect in serological diagnosis but the serologist should weigh each step of his technique and invoice his materials with unusual thoroughness. This part of the problem can be brought to a solution by the close supervision of laboratory procedure and the demanding of two tests such as the complement-fixation and precipitation test on each specimen.

Of equal or much greater importance to the clinician is the question of negative reactions in the presence of positive disease. A wide variance is evident in the data on this part of the subject and with the accumulation of reports this variance has become more marked. Weakly positive or modified reports when properly done are of great value. We cannot help but admit the inconvenience and nuisance of a single weakly positive reaction in the problem of a false or pseudo syphilis, but there can be no denial of the fact that this type of reaction is occasionally the first definite marker in a chain of evidence which leads to a syphilis diagnosis. On the other extreme there is considerable satisfaction but no special merit in observing positive reactions in those individuals evidently

syphilitic. It may be compared to finding fractures by x-ray when deformity is obvious. The outstanding value and many times the purpose in the employment of these tests is to detect the cases clinically latent and of doubtful existence; and since the sera of these may produce only weakly positive reactions the technique of the tests should be sensitive and of such merit as to encourage confidence in their acceptance. I think it can be accepted as a biological fact that the complement-fixation reaction and the other tests used in this connection are dependent for their action on the "reagin" or antibody formation present in the sera. Since this product which is closely associated with immunity is known to be a fluctuating factor the outstanding need of exactness and sensitiveness in these tests is evident. At best, I feel that no serological test can ever be expected to detect all cases of syphilis. The "reagin" or Wassermann substance is thought to be a product of cellular infiltration in and about the foci of infection, and since Warthin has shown that the spirochete may be at such a state of inactivity as to live in the heart muscle and other places without producing this usual infiltration it can easily be explained how insufficient amounts of "reagin" are possible and produce negative tests in the face of positive disease. These foci do not remain at a fixed state of activity and are in readiness for proliferation when the immune factor or antibody production permits. The Wassermann reaction, then, in its different degrees of positiveness is an index of spirochetal activity and its strength bears a definite relation to the growth and proliferation of the syphilitic infection. Clinically, it is important to appreciate the location of this activity because activity in some physiologically unimportant tissue may produce few symptoms where much smaller lesions in more important locations may give definite symptoms, while being productive of very small amounts of "reagin" in the blood. Thus such syphilitic activity may account for negative, weakly positive or modified complement-fixation reports. These possibilities make it clear, I think, that next to specificity sensitiveness of the tests done on this type of sera in the search for syphilis is a quality of primary interest. The serologist in his anxiety to avoid falsely positive reactions may use methods of reduced sensitiveness and accepts the fact that he misses many cases of syphilis in order that his positives may be acceptable. In a degree the clinician can admit this principle in part on the one extreme, but as primarily stated the merit of this test is not merely to confirm clinical diagnosis but to aid in the diagnosis of cases with doubtful clinical findings and in those cases where the diagnosis by clinical and historical evidence is not possible. I think it is a fairly accepted principle of diagnosis that in a certain number of cases the presence of syphilis is detected only by serological examination. In this respect again it may be urged that two different tests may be employed, and I think it may be accepted as a fundamental principle in latent syphilis when small amounts of antibody are present. The error, if such may exist, may be expected on the side of the falsely negative reaction. It is in this respect with the great improvement in technique of complement-fixation and other tests that the laboratory has been of immeasurable assistance in clinical syphilology.

The employment of the Wassermann reaction and other serological studies in their relation to treatment and follow-up on treated cases form a chapter of unusual interest and importance. Since the basis or principle of action in these tests is based on the antibody or reactionary substance of the spirochete, in other words, the activity of the syphilitic process, I cannot help but conclude that repeatedly positive reactions after rest periods or during treatment are indices of continued infection. These patients are syphilitic and relapses are to be the expectation. It can also be expected logically in the vast majority of cases that the first sign of relapsing syphilis is the production, before any clinical manifestations may be noted, of a positive serology. This may be observed weeks and even months as the only sign of the syphilitic process. This statement is not meant to suggest negligence in the routine observation for clinical signs and symptoms but only to urge the use of this method as an aid in detecting the first sign of relapsing

syphilis. It is here again that the importance of technique and accuracy in the laboratory cannot be underestimated.

Finally, may I state as another fundamental principle that spinal fluid examinations are recognized and are a part of outstanding merit in the complete diagnosis and treatment of most cases of syphilis. We must insist upon a complete examination of the fluid. The single test many times is misleading as the same fundamental principles are involved here as in the examination of the blood. This examination should include total cell count, complement-fixation tests, colloidal gold and globulin. I think that we can state that no study of latent syphilis is complete without this information. I have seen cases of the infection of the central nervous system escape detection in the minutest neurological examination.

In conclusion, I would make a plea for better serological technique. Too much harm has been done by insufficiently trained and inexperienced technicians, to submit further to their unsupervised care the serological diagnosis of so important a disease. These workers should appreciate the necessity of thoroughness and should understand their reagents and be able to analyze difficulty and find possible error. There are no short-cuts to success when dealing with such values as these. It behooves the supervising physician as well as the laboratory to uphold the dignity of this principle of serological diagnosis, the determination and establishment of which is one of the most brilliant feats of biological science.

Undulant Fever in General Practice*

E. H. Shuller, M.D.
McAlester

It is my purpose in presenting this paper, not so much to present the problem from a technical standpoint, but more to present it with the hope of creating more interest in the disease by the men in general practice.

In making a survey of this disease, the following terms are used synonymously: Undulant fever, Malta fever, Gibralter fever, Melitensis septicemia, Goat fever, Mediterranean fever, Brucella fever, and several others.

There is reference in the writings of Hippocrates which apparently are instances of this fever. In the eighteenth and early nineteenth centuries, medical officers of the British army and navy reported cases of recurrent and intermittent fever in Malta, which did not entirely resemble typhoid fever, but was not differentiated from it. It was not until 1859 that it was accurately written up by Marston as it existed in Malta, and he named it Mediterranean remittent or gastric remittent fever. In 1879, Veale again described the disease in patients who had returned to England from the Mediterranean area, after they had had military duty there. In 1886, Bruce isolated a micrococcus from the spleen of patients dying from the disease, and reproduced the disease in monkeys. In 1897, Wright discovered that there was a specific agglutinin in these patients.

In 1904, a commission was appointed by the British government to make a thorough study of the situation in Malta, to determine the origin of the infection in man, and establish methods of prevention. They found that the main source of infection was from goat's milk. The source was removed, and the disease was almost immediately brought under control.

Epidemics of abortions in cattle have been recorded in the Scriptures. Orosii records an epidemic in Rome in 278 B. C. In the early part of the nineteenth century, the contagious character of the disease was noted by Lawrence and Skellet. In 1886 it

*Chairman's Address read before the Section on General Medicine, Oklahoma State Medical Association, Annual Meeting, Tulsa, May 11, 1937.

became so evident that it was proposed in the British House of Commons to bring the epidemic abortions of cattle under the contagious disease (animal) act. In 1895, Bang and V. Stribolt discovered the specific causative organisms. These reports were later confirmed by research men in other countries of Europe, and in 1910 MacNeal and Kerr isolated the same organisms in the United States.

The condition existing in man and in cattle were studied simultaneously, but it was not until 1918, when A. C. Evans demonstrated the extremely close similarity between the organisms causing the two diseases. It has since been repeatedly proven that they are both caused by various strains of the same organism. That organism is called Brucella, after D. Bruce, who first isolated the organism in 1886.

The natural habitat of the Brucella is in domestic animals. Infections occur naturally in cattle, goats, sheep, swine, mules, horses, dogs, cats, rabbits, rodents, chickens, and ducks. This disease produces a very great economic loss, as it greatly inhibits the reproductive power of the animal, and renders them less desirable for use. The main problem to man, however, is that the infection in these animals is the source of infection in man. Practically the entire infection in man has its origin in swine, cattle, sheep and goats. The problem of controlling the disease in these animals is truly a great one, because they may become infected with any strain of the organism from any of the animals or fowls mentioned above. Though the natural habitat is the domestic animal, the Brucella, Meletensis and Abortis can live for long periods of time outside the body. The organisms have been shown to retain their vitality in moist manure for seventy-five days, in fetal membranes, in cool weather, for ninety days, and in tap water for thirty-five to forty days. The source of infection to these animals, as to man, is through the intestinal tract. Therefore, it is very evident that the control of this disease is a very difficult one, as, once a pasture becomes infected, and there are infected cattle in the herd, it is a constant potential source of infection to the rest of the herd.

The routes of infection to man are, (1) the ingestion of the organism through the intestinal tract by using dairy products from infected cattle, as milk, cream, cheese, etc., and by eating poorly cooked meat from infected animals; (2) and through the broken or unbroken skin, as in persons treating or caring for infected animals, or in the handling of meats from infected animals.

Once a cow becomes infected, the normal excreta will show the presence of organisms. After a few weeks they will disappear from the urine, but will remain in the excreta from the intestinal tract. Invariably the udder becomes infected, and may remain so for months, or even years. It is very evident, therefore, that the most likely source of infection of the cases in this section of the country, is from the use of dairy products. A careful investigation of the records of the State Milk Inspector will reveal a striking number of cattle in our state that have been positive reactors to Bangs disease, and a check into the records of our State Epidemiologist will show a marked increase in the number of cases of undulant fever reported. However, there has been no effort on the part of most doctors to make any study of undulant fever. Therefore many cases are being overlooked.

Undulant fever has formerly been considered a disease of young adults, with a strikingly large percentage in males. This could probably be explained by the fact that the male adult comprises the large proportion of cattle and meat handlers. However, undulant fever may affect one of any age. In a paper presented by Dr. Fred Angle of Kansas City before the recent session of the *American College of Physicians*, he gave reports of a survey made within three weeks prior to the session on five thousand one hundred forty school children, on whom he made skin tests for undulant fever. He reported four hundred fifty nine or 8.9 per cent positive reaction for the skin tests in which Brucellin was used. He had not completed his survey, but he had been able to contact one hundred fifty of these four hundred fifty-nine children. He determined that thirty-five per cent of these had no clinical symptoms of undulant fever, but that sixty-five per cent had one or more clinical symptoms. It has been thought formerly that the positive reactions in children was produced by ingestion of milk with the or-

ganisms in it, and not from the disease itself. But the present opinion is that it can be produced only by the actual infection.

When the infected material is taken into the intestinal tract, or through the skin, the organisms penetrate the mucous membranes, and reach the general circulation, thus becoming a systemic disease from the beginning of the infection. The usual incubation period is from fourteen to seventeen days, however, cases have been reported as early as six days after exposure.

The symptoms of undulant fever are varied. There may be any chain of symptoms. Hughes says, "So varied are the symptoms, and so uncertain the duration and course of this fever, that it is impossible to give a description to which all cases can be referred." The onset is usually gradual. There is usually weakness, with a low-grade fever, which may be recurrent, intermittent or undulating. There is profuse sweating, and often rigors. There is very frequently generalized aching pain, or headache, backache, aching in the joints, and sometimes neuritis. There is also loss of appetite, loss of weight, and often abdominal cramps and constipation. There is usually a coated and swollen tongue, and a very foul breath. There may be tenderness to palpation of the abdomen, and enlarged and tender spleen and liver. A patient usually becomes very listless and very nervous, and often has insomnia. The symptoms persist throughout the course of the disease, and are present in proportion to the seriousness of the disease. The course of the disease may be from two to three weeks, to several years. Dr. Angle reports one case who has had persistent fever for over twenty-one years on which a diagnosis of undulant fever has recently been made.

Routine laboratory examinations show a moderate anemia in persistent cases, and a leukopenia. There may, or may not be excessive pus in the urine. There is quite frequently pain in the region of the kidneys, and bladder, with pus being present in proportion to the pain.

Due to the extreme variableness of the symptoms, it is extremely difficult to make a diagnosis from the clinical symptoms alone. Any case, however, which is not readily diagnosed, and has the above symptoms, should be considered as suspicious, and an attempt at diagnosis of undulant fever should be made. There are specific agglutinins present in the blood in most cases, which gives a specific precipitation test at certain stages of the infection. This, however, is variable, and like the Widal test, is not obtained early. These agglutinins also decline in quantity, in the blood, as the patient recovers, thus the precipitation test decreases in proportion. A definite skin reaction is obtained in practically all cases, and once present, will always be present, even after the patient has recovered from the disease. This test is made by intradermal injections of special dilution of vaccine containing Brucella Melitensis and Abortis, or by the use of Brucellin. If the test is positive, there is an area of erythema at the site of injection at two to four days following injection. In evaluating the case it must be remembered that a positive skin test may be present in a healed case, also that not all cases will show an agglutination. It must also be remembered that about ten to fifteen per cent of cases of tularemia produce a positive skin reaction, therefore a diagnosis must be made by a proper evaluation of the clinical symptoms, the agglutination test, the skin test, and the elimination of all other diseases.

This disease must be differentiated from typhoid and para-typhoid fevers, tuberculosis, malaria, endocarditis, rheumatic fever, influenza, and other more rare diseases, such as tularemia, septicemia, etc.

Once the diagnosis is made, treatment is not a simple procedure. General supportive and symptomatic measures should be instituted. Specific vaccine therapy seems to be the most generally used. A specific serum has been developed, but at the present time, has not proven practical. Intravenous administration of dyes has been used, but in most cases has been discarded as useless. Foreign protein therapy also has been used with some beneficial results. Some authorities claim very good results with the use of intravenous typhoid vaccine.

The course of the disease under treatment may be short, or it may extend over a long period of time. If it does not clear up immediately, it becomes chronic, and

in most cases becomes localized in some part of the body, thus producing a chronic focus. Organisms have been isolated from foci of infection as cholecystitis, hepatitis, peritonitis, salpingitis, oopheritis, phlebitis, arthritis, bursitis, otitis media, sinusitis, tonsillitis, apical abscesses of the teeth, pyelitis, orchitis, epididymitis, and many others. The chronic case, of course, will not respond to treatment until the focus has been removed.

One might ask when is a case cured. It cannot be definitely determined, but there are certain signs which indicate a recession of the infection. As the infection subsides, the subjective symptoms disappear, and the fever subsides. There is usually a return of the appetite and a gain of weight. There is a fall, or absence of the agglutination, and the blood picture returns to normal.

The morbidity in this disease is slight. It is capable of producing death, but the death rate is extremely low. The economic loss from the disease is very great, as the patient often is incapacitated for a long period of time. Even though he may continue to work, his efficiency is markedly diminished. This disease is a growing problem in our state. In a recent correspondence with Dr. Beyer, our State Epidemiologist, he informed me that in 1935, there were seven cases of undulant fever reported in the state. In 1936, there were ninety-six cases reported. He further stated that during those two years, twenty of the one hundred three cases for the state were reported from McAlester and vicinity (the home town of the author). It is my opinion that this disease is not localized to any one district. It is more likely that in most sections, it is going unsuspected and unrecognized.

In concluding this paper I wish to report briefly four cases which in my observation are rather typical of the twenty-two cases that have come under my care.

Case No. 1. Mrs. H. L. D. First seen June 10th, 1936. Height five feet, one inch. Weight one hundred sixty pounds.

This patient, a white female, age about thirty-two, came in with symptoms of pregnancy. There was nausea and vomiting, and she had missed two menstrual periods. There was generalized aching pains and severe headaches. The blood pressure was 140/86. There was obstinate constipation. On July 17th, there was an abortion with profuse hemorrhage. She had begun to have fever about July 1st. Recovery from abortion was slow, and the fever and aching continued. A positive skin test and a complete agglutination was obtained about August 15th. She was given vaccine in August and fever persisted. The vaccine was repeated in September. Following this course the patient made an apparent recovery.

Case No. 2. Mrs. J. F. P. White female, age forty-one. First seen May 20th, 1936.

She complained of dull headaches, some disturbance of vision, pulling sensation in back and neck. Some soreness in fingers and joints, insomnia, and very marked feeling of lassitude. There was afternoon temperature for the past month, the maximum being 99.8.

Examination showed: pulse 68, blood pressure 98/62, general physical examination essentially negative. Basil metabolism rate minus 16. Urine negative, slight anemia and mild leukopenia. Blood sugar 111.

There was a positive skin test and agglutination test. One course of vaccine treatment was given. She had a very profound reaction from the vaccine, but her symptoms persisted. She was given intravenous typhoid, also with a severe reaction, but after a few injections, she became fever free, and her symptoms disappeared. The entire length of the infection was about nine months, if there is a recovery at this time.

Case No. 3. Mrs. W. B. V. first came under my observation in 1933. She complained of headaches, general aching, malaise, marked nervousness, insomnia, etc. She gave history of a pregnancy complicated by some kidney involvement one year before. She had marked abdominal pain, and food distress at times. The abdominal pain often became localized in the right lower quadrant. In 1935, she discovered she was having fever daily, also this year she had several attacks of pain in the region of her appendix, and the appendix was removed. She improved some after this, but after a few months the fever returned. In the spring of 1936, a positive

skin test and a positive agglutination was obtained. The routine laboratory examinations were about as reported in the previous case.

She was given vaccine therapy. The fever and other symptoms persisted. She later developed symptoms of pyelitis and a cystoscopic examination was done, and pus demonstrated in both kidneys. This has recurred at fairly frequent intervals. Her courses of vaccine did not relieve the symptoms. Her fever persists, and even as late as one week ago she had a rigor. She still has the typical signs of Malta fever, but no definite focus of infection has as yet been demonstrated.

Case No. 4. W. J. D. was the first case to be definitely diagnosed as Malta fever in McAlester, under our observation. There was very marked malaise, aching, lassitude, and fever, with often attacks of pain in the region of the gall bladder sufficiently severe to require opiates at times. A complete examination was made including routine laboratory work, which was negative except for mild anemia and leukopenia, gall bladder and gastro-intestinal x-rays, gastric analyses, chest x-rays for tuberculosis, blood cultures, blood sugar determinations, blood calcium determinations, etc., all of which were negative. Also he had examinations at Talihina, Oklahoma City, Topeka and Mayo's. About February or March, 1936, six months after the onset of symptoms, a positive skin test was obtained, and later a positive agglutination test was obtained. These were both repeated several times before a positive diagnosis was made. Treatment by vaccine therapy has not been entirely successful, and the patient still has positive clinical symptoms of Malta fever. This patient has not been able to carry on his work as a laboratory technician for more than a year.

In conclusion let me repeat that this disease is a growing problem in our state.

It has meant a great economic loss to the farmer and dairyman, who has an infected herd. It also means a vast economic loss to our state because of the decreased efficiency of the people suffering from the disease. But more than that, it causes a lot of suffering which can, to a large extent, be avoided. Though our treatment as yet is somewhat limited, we can aid a large per cent of those suffering from the disease. By a proper understanding of the disease, and the education of our people, we can prevent the spread of this disease.

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The Army Medical Library and Museum

In the Army Medical Library and Museum in Washington, D. C., are housed some of the finest collections available in the field of medicine. The library now contains some 400,000 bound and unbound books and approximately 600,000 pamphlets and periodicals. Included in this material are about 450 incunabula of the total 600 in existence. This library and its Index Catalogue have been recognized everywhere as among the greatest of bibliographic facilities in the world. The House of Delegates of the American Medical Association has repeatedly gone on record as favoring a new building to house these invaluable collections. The present building was constructed in 1887 and the contents of both the library and the museum have outgrown their accommodations. Whether the Army Medical Library and Museum building is erected on the site of the Army Medical Center to round out that institution, which includes the Walter Reed General Hospital, the Army Medical, Dental and Veterinary Schools and the Biological Laboratory, or is to adorn one of the beautiful parkways or drives elsewhere in Washington is really not the vital consideration. The need for a new building is pressing. The construction of such a building would give opportunity for modernizing the equipment and making the materials far more available than they are now. It would serve as a monument to medicine in consideration of its services to human welfare.—Journal A. M. A., May 15, 1937.

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The Value of the Leukopenic Index in Allergic Diseases*

E. RANKIN DENNY, M.D.
TULSA

Before presenting to you the results of my studies concerning the leukopenic index as an adjunct in the diagnosis of food allergy, I wish to review very briefly the history of the development of this test from the time of its discovery by Vaughn in 1934.

HISTORY

Widal, Abrami and Iancovesco[1] some seventeen years ago suggested that a determination of the leukocyte count following the ingestion of milk might be of value in determining the function of the liver. In April, 1932, Vaughn observed a marked fall in the leukocyte count in a patient whose hemicrania developed following the ingestion of milk. This suggested to him that a quantitative estimation of the leukocytes following the ingestion of other foods might be of value in determining food sensitivity. So in November, 1934, before the *Association for the Study of Allergy* in Cleveland,[2] he presented his data and described the technique used, a hundred and ninety-one leukopenic indices forming the basis for his report.

His technique at that time was to take two fasting white blood counts at ten-minute intervals, have the patient eat the food to be tested, count the leukocytes at fifteen-minute intervals for an hour, and then a final count at the end of ninety minutes. He suggested that a drop of more than one thousand cells from the fasting count indicated sensitivity to that food.

In 1935 Rinkel[3] modified the technique as described by Vaughn, which is the technique now used by several others who are doing these tests including Gay,[4] Zeller,[5] Squier, Madison[6] and myself. Gay[7] has found the test especially valuable in a study of patients suffering from peptic ulcer or in persistent hyper-thermia, and Rinkel has made several contributions on its value in the study of patients suffering migraine, hay-fever, asthma and eczema.

Since starting this work in 1935 I have made 4,110 leukopenic index studies in patients suffering bronchial asthma, hay-fever, atopic eczema, migraine, mucous colitis, peptic ulcer, acneiform eruption, angioneurotic oedema, and urticaria.

TECHNIQUE

The technique described by Rinkel is as follows except for the statements with reference to the counting of eight hundred cells.

The patient comes into the office in a fasting state and rests for thirty minutes preceding the fasting count. Furthermore, the patient is not permitted any unusual exercise before coming to the office, although a short walk does not materially affect the fasting count. The food is prepared without the addition of condiments. Following the taking of the fasting count

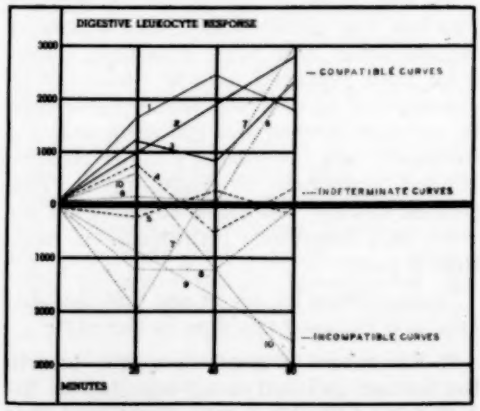

CHART I.—Types of curves obtained by plotting the leukocyte counts made at twenty, forty and sixty minutes after ingestion of a test food. The solid lines indicate compatible curves; the interrupted, indeterminate curves; and the dotted lines imcompatible curves. (Rinkel and Gay.)

*Read before the Oklahoma State Medical Association Annual Meeting, Tulsa, May 11, 1937.

the food is eaten immediately, the patient returns to the reception room and rests and reads. He is not permitted to carry on conversation or smoke. In twenty, forty and sixty minutes after the meal, additional leukocyte counts are made using a one to twenty dilution, shaking the pipette a minimum of sixty times to assure maximum distribution of the cells in the pipette which will in turn minimize the variation of the number of leukocytes on each square mm. of the counting chamber. Both sides of the counting chamber are filled and eight square mms. are counted.

However, some three months ago, following some special experimental work in determining the coefficient of variation while counting eight square mms. (four hundred cells) and simultaneously counting sixteen square mms. (eight hundred cells), it was determined that a source of error could be minimized if our tests were made counting sixteen square mms. each time the blood was examined for a count. This modification of the technique as described by Rinkel is the one I am now using.

The white counts are then plotted on a graph as indicated in the accompanying charts.

Among the three types of curves, the compatible, the indeterminate and the incompatible, the indeterminate type is the one which gives rise to greatest difficulty in its interpretation. In fact, one has to rely solely on the clinical symptoms as the criterion for elimination of the food used when such a curve is obtained. I have found among this group some foods which, when included in the diet would cause symptoms, and others which may be kept in the diet without giving rise to trouble.

One may obtain a compatible curve in which instance the food definitely causes symptoms. An example of this may be noted in Curve 4 of Chart II.

It should be emphasized that all foods that show an incompatible curve do not necessarily provoke symptoms. I have not as yet analyzed the percentage of foods showing incompatible curves which give rise to clinical symptoms but Rinkel and Gay have estimated that ninety per cent of these curves have been associated with

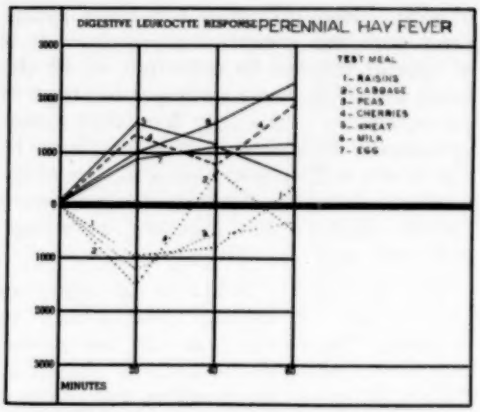

CHART II.—Curves obtained in perennial hay-fever patient in whom all skin tests were negative, both scratch and intradermal. NOTE compatible curves for wheat (5), milk (6), and eggs (7), and incompatible curves for raisins (1), cabbage (2), and peas (3). Cherries (4)—a compatible curve but a cause of clinical hypersensitiveness.

clinical manifestations of hyper-sensitiveness.

REPORT OF CASES

An example of the value of the digestive leukocyte response is that of a patient with perennial hay-fever whose symptoms began in 1931. At that time and during the subsequent five years she was under the observation of a very competent allergist who had repeatedly made intradermal and scratch tests to all inhalents and foods. He reported the tests entirely negative, with the exception of suggested reactions to orris root, grasses and house dust. However, her symptoms are as bad in the winter as they are in the summer months. Attempt to treat her with these extracts was unsuccessful.

Her history is of special interest in the fact that when she was away from home she would usually be free of symptoms. The history suggested a contact or an environmental cause. Before proceeding with the leukopenic index study, intradermal and scratch tests were made and no positive reactions were elicited. In February and March of 1936, fifty-six foods were tested by the leukocyte response and among these citrus fruits, green beans, peas, cabbage, raisins, chicken, tomato, beets, cucumbers, onion, shrimp, cranberries and lima beans showed incompatible curves. All of these foods when subse-

quently eaten provoked hay-fever symptoms with the exception of chicken. It is of special interest to note that of all the foods tested showing a compatible type of curve, cherry is the only food that causes symptoms. This is indicated in Chart II, Curve No. 4. This case also is of special interest in that compatible curves were found following the ingestion of wheat, milk and eggs.

The leukopenic index is of value in many cases of asthma, particularly in children. The eleven year old boy whose digestive leukocyte response is shown in Chart III gave no positive intradermal tests to the foods indicated. Milk and chicken both provoked symptoms. Three years ago he had asthma, and egg was eliminated from his diet on suspicion. He was temporarily improved. But during the past year he has had many attacks. Our study began in February of this year and he has been free of symptoms since eliminating the foods which gave incompatible curves. In addition to chicken and milk these included beef, white potato, spinach.

No other treatment has been instituted.

One occasionally sees patients in whom more than one type of tissue may show symptoms of hyper-sensitiveness. Such a case is that of a boy, age eleven, first seen June, 1935, who had nasal allergy and eczema from the age of eight months. Periodically he has had relief of symptoms, but

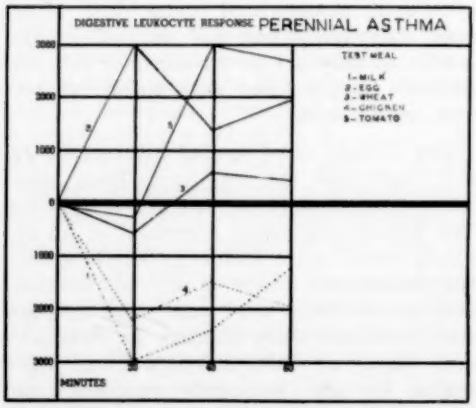

CHART III.—A case of perennial asthma who three years ago was clinically sensitive to egg. NOTE Curve No. 2 (and not clinically sensitive now). NOTE marked leukopenic reaction to milk (Curve 1) and chicken (Curve 4), both foods causing asthma.

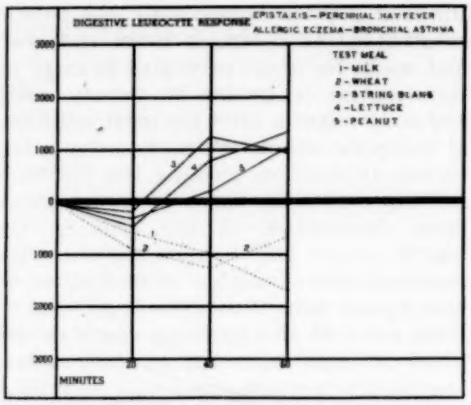

CHART IV.—A case of perennial hay-fever with nose bleeds, bronchial asthma, atopic eczema, whose skin tests were definitely misleading in that milk and wheat showed no reaction, whereas the digestive leukocyte response suggested hyper-sensitiveness to milk and wheat (and other grains). Subsequent study showed milk not to be a clinical factor, whereas all the grains on ingestion provoked symptoms.

there have been no periods during the last five years longer than three months when he would be totally free of either some nasal or dermal disturbance. He has had asthma periodically during the last four years. During the past four months he has had intermittent nose bleeds. Intradermal tests to milk, egg and wheat were negative.

He had an incompatible type of curve following the ingestion of milk and wheat, but the ingestion of milk did not provoke symptoms, whereas wheat caused an aggravation of the skin lesions. (Chart IV.)

Further tests showed the following incompatible foods according to the digestive leukocyte response: potato, grape, rye, lima beans, barley, oats, soy bean, buckwheat, banana, pineapple and prunes. All of these foods have been gradually added back to his diet with the exception of the grains, and he has remained entirely free of asthma, hay-fever and nose bleeds during the past year. However, he is infrequently slightly bothered with eczema of the hands.

The incidence of allergic factors in migraine is unknown. However, there can be little doubt that it is a factor in some patients. The migraine patient whose leukopenic responses are indicated in Chart V gave a history of also having suffered periodic attacks of bronchial asthma and per-

ennial hay-fever. He frequently had periodic attacks of migraine with scotoma, not infrequently unilateral, for seventeen years. Six hours after the patient ate wheat during a digestive leukocyte response test, he developed a severe migraine attack and subsequently repeated ingestion of bread caused an attack. He stated that following the egg and milk tests both of which gave incompatible curves, that a burning sensation in the stomach and a "greasy" taste in his mouth occurred. During the time the banana test was being made he developed sneezing and an extreme rhinorrhea.

He remains free of symptoms as long as he eliminates these foods from his diet.

During the past two years Gay has made observations of the digestive leukocyte response on patients suffering from peptic ulcer. I have studied one patient in great detail who four and two years ago had attacks of violent hematemesis, the cause of which was an ulcer in the duodenum. The usual Sippy treatment was given but the patient continued to complain of gas, indigestion, burning and at times abdominal pain. In October, 1936, we started determining the digestive leukocyte response to many foods in his diet. The curves of five of the foods which were tested are indicated in Chart VI.

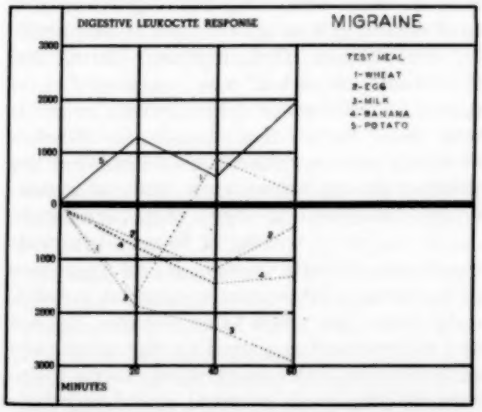

CHART V.—A case of migraine in whom the ingestion of wheat caused an attack of migraine within six hours after the test. He experienced a burning sensation in the stomach within an hour after the egg test. Following the ingestion of banana he had a fit of sneezing and watery discharge from his nose. He experienced no discomfort after the ingestion of potato.

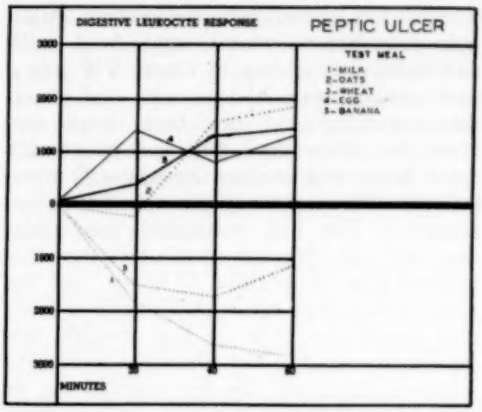

CHART VI.—Symptoms of gas, indigestion and sour stomach followed the ingestion of milk (Curve 1), oats (Curve 2), and wheat (Curve 3). No symptoms were produced following the ingestion of egg and banana.

One hour after the ingestion of milk he experienced a burning in the stomach. Thirty minutes after eating oatmeal and wheat he complained of a sour stomach and indigestion, and these symptoms persisted for three hours, at which time he took an alkaline powder for relief. Following the ingestion of banana and beef none of these symptoms developed. Complete elimination of these incompatible foods and others which showed an incompatible curve has made this patient comfortable and he no longer takes his alkaline powders.

The experience we have had with this one patient is typical of those patients studied by Gay, in whom complete relief of peptic ulcer symptoms can be given by the elimination of foods to which the patient is hyper-sensitive. Since no logical explanation has been given for the development of these ulcers, it would seem that the mechanism by which they are produced is comparable to the Arthus phenomenon, the basis of which is certainly an anaphylaxis phenomenon. These observations which Gay has made are the most important contributions that have been developed in recent years in the medical treatment of peptic ulcers.

Cunningham was the first to call our attention to the fact that acneiform eruptions of the face may be improved by the elimination of foods. The value of the digestive leukocyte response is as yet un-

known. The patient whose digestive leukocyte response to wheat, eggs, beef, milk and salmon is shown in Chart VII was a girl sixteen years of age, who had acneiform eruptions of her face, back and chest for three years. She had previously tried X-ray and vaccine therapy with some success following x-ray therapy, but it had recurred. The last treatment was given one year ago. Because of the fact that this patient also complained of hives, and the further fact that her mother suffers grass and weed hay-fever, it was thought advisable to observe her digestive leukocyte response to foods. By the elimination of milk from her diet the patient remained free of symptoms for nine months. At the end of this period she developed an attack of influenza. Following recovery of this disease she started taking milk again with the development of acneform lesions of her face within one month after starting back on this food.

Some of these patients are definitely improved by the elimination of allergens from their diets. The fact that glandular therapy and x-ray therapy may benefit these patients does not refute the idea that hyper-sensitiveness may be a factor in some of these patients.

COMMENT

Since Vaughan started this work three years ago, Rinkel, Gay, Zeller, Squier and I have studied the interpretation of the leukopenic index in hypersensitive individuals, and from our observations it seems quite definite that the leukopenic index has a proper place in the study of patients who manifest clinical allergy. But a word of caution and conservatism would seem timely.

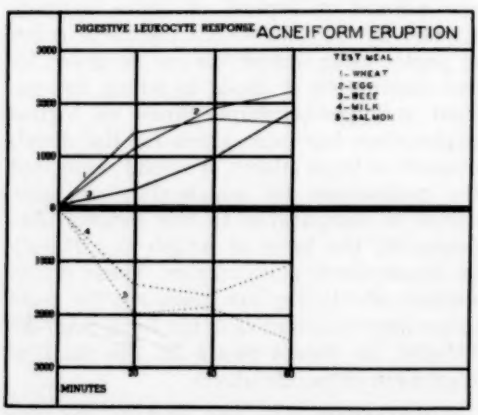

CHART VII.—Curves 1, 2 and 3, representing wheat, eggs and beef, respectively, demonstrate compatible types of curves. Patient clinically negative to these foods. The milk (4) and salmon (5) were removed from the patient's diet, and has remained clinically free of symptoms.

During the past two and one-half years I have made over four thousand studies on individual foods by the digestive leukocyte response method. I first used the technique as advocated by Vaughan, but following Rinkel's report on his modification of Vaughan's technique, his method has been used in my office. During the past few months I have made a special study of the accuracy of the customary method of making leukocyte counts, and this study leads me to believe that some of the errors and occasional inconsistency of the digestive leukocyte response in relation to clinical manifestations may be due to the fact that we have been counting too few cells. That is to say, the coefficient of variation in counting eight square mm. in making our tests is definitely greater than when twice the number are counted. Further studies are being made to determine whether this possible source of error will diminish the incidence of inconsistencies between the digestive leukocyte response and the clinical manifestations.

The mechanism by which leukopenia may develop following the ingestion of a food which acts as an allergen is unknown. In 1925 Sabin, Cunningham, Doan and Kindwall[8] reported the occurrence of normal rhythms of white blood cells. It was their belief that there are showers of dying polymorphs which stimulated the production of leukocytes with a consequent increase in the total leukocyte count. In other words, at hourly intervals there are periodic increases and decreases of the total white count in normal individuals. Some six years later Ponder, Saslow and Schweizer[9] reported on the constancy of the white cell count when large numbers of cells were counted, and from their studies one must conclude that no demonstrable change in the polymorph count occurs, which tends to refute the idea that showers of dying cells do not make their appearance in the circulation of sufficient magnitude to be discernible, and that the apparent large fluctuations were due

principally to errors of method in their determination. Ponder and his co-workers in counting the cells of a single sample of blood showed that the coefficient of variation when only two hundred cells were counted was a 7.7 per cent, when four hundred cells were counted a variation of 4.2 per cent occurred, whereas the coefficient of variation was only 2.3 per cent when a total of eight hundred cells were counted. More recently Zeller,[10] in taking serial white blood cell counts under resting and fasting conditions found a very slight variation not exceeding seven hundred fifty cells, and emphasized that the apparent discrepancy in the findings of previous investigators were primarily due to the difference in the conditions of their experiments.

During the last two months I have made a study that is in part comparable to that of Ponder's, particularly with reference to the coefficient of variation in counting white blood cells as is customarily done in making routine white blood counts, and comparing the coefficient of variation found when a limited number of cells were counted with the coefficient of variation when a large number of cells were counted. That is to say, in counting four square mms. (two hundred cells) the coefficient of variation is approximately three times the variation found when sixteen square mms. (eight hundred cells) are counted. Since an exact quantitative computation of the total white count is imperative in the determination of the leukopenic index, any additional refinement in technique which will diminish the sources of error, is most desirable. Therefore, it would seem advisable for other investigators to adopt this technique, which will minimize an obvious source of error.

Meuller[11] has shown that a variation in the total leukocyte count occurs following vaso-constriction of the skin capillaries, and a simultaneous opposite type of reaction in the capillaries of the liver, stomach and other abdominal viscera which is mediated through a disturbance of the autonomic nervous system, and since we do observe a transitory pallor, which is caused by a dermal vaso-constriction, often preceding the onset of clinical manifestations in allergy, and the fact that this peripheral vaso-constriction is of sufficient magnitude to occasion symptoms of chilliness immediately preceding the onset of clinical allergic symptoms, it follows that a variation in the leukocyte count should be expected with the change in the state of the dermal and visceral capillaries. If vaso-constriction occurs a leukopenia is present. If the capillaries are dilated a leukocytosis develops.

A word of warning should be given to those interested in this work, that one cannot expect results by the indiscriminate use of the digestive leukocyte response. If great accuracy is not used in making the counts, if the conditions under which the counts are made are not satisfactory, if a thorough knowledge of the interpretation of the digestive leukocyte response is lacking, and if an accurate account of the clinical manifestations is not kept on the part of the patient following the ingestion of the food, such a study will lead to great error in the determination of the food factors in the hyper-sensitive patient.

SUMMARY AND CONCLUSION

The history and description of the technique of the digestive leukocyte response is given. The anamnesis of patients suffering from perennial hay-fever, perennial asthma, atopic eczema, migraine, peptic ulcer and acneform eruptions are recorded.

I have found the digestive leukocyte response tests of distinct value in the diagnosis and treatment of patients suffering food hyper-sensitivity. It must be admitted that the skin testing by the scratch or intradermal methods to the protein extracts of food have limited value. Furthermore, it is a fact that skin hyper-sensitiveness does not parallel clinical respiratory or gastro-intestinal hyper-sensitive manifestations. We see some patients in whom the skin is so sensitive that a weal surrounded by an area of erythema develops at the site of the scratch or intradermal injection of all protein substances to which he is tested; in others we elicit no positive skin reactions to any substance tested by the skin method. I have found that the determination of the digestive leukocyte response in these groups of patients is a distinctly valuable adjunct in determining the causes of their clinical manifestations.

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The Kepler-Adler Pregnancy Test Demonstrating Histidine in Urine

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MUSKOGEE

We were very much interested in Renton's report in the *South African Medical Journal*, Capetown, July 13, 1935, of the Kepler-Adler test as described by him. It is very simple and requires only approximately thirty minutes to complete.

This test may readily be performed by any general practitioner. It is not claimed to be as accurate as the Aschheim-Zondek or Friedman tests, but it has the advantage that a result is obtained in about thirty minutes. If the test is used in conjunction with clinical observations, it is of the greatest assistance in the diagnosis of early pregnancy. Five cubic centimeters of filtered urine are placed in a test tube, and bromine reagent (one cc. of *pure bromine*, one hundred cc. of *glacial acetic acid* and three hundred cc. of *distilled water*) is added by means of a pipet until the mixture becomes light yellow. Usually from about two to five cc. of the reagent is necessary. This is the most intricate part of the test, as it is necessary to have a minute excess of bromine in the urine before proceeding with the next step. The urine "consumes" the bromine, and the excess of bromine is tested for with the potassium iodide starch paper. The best way to do this is to cut a series of small squares of the white paper and put them on a piece of glass. By means of a glass rod, a drop of the mixture is placed on a piece of the paper. Free bromine gives a violet color. If there is too much bromine, the color will be dark violet. The object is to obtain a pale violet reaction, indicating a minute excess of bromine. It is necessary that the color reaction remain stable for ten minutes. If the color is found to be too dark, a few more drops of urine are added until the correct color is obtained. When this color reaction has been settled, *i. e.*, after a lapse of ten minutes, three cc. of alkali reagent (ten gm. of ammonium carbonate, ninety cc. of distilled water and two hundred cc. of pure liquid ammonia) are next added and the mixture shaken and then placed in a steaming water bath for three minutes; if the test is positive for histidine and pregnancy, a mauve deepening to reddish purple, depending on the amount of histidine present, will result. This usually becomes more marked on standing for a few minutes. Best results are obtained by using a morning specimen having specific gravity around 1.020. A twenty-four hour specimen may be used if it has a high specific gravity and is probably more accurate, but we have had good results with morning specimens of high gravity. The only difficulty of this test is in interpreting the mauve or purplish color. This must be definite. A slight darkening or brownish coloring does not indicate a positive test. The bromine reagent is very unstable and must be kept tightly corked. It is frequently necessary to add ten to fifteen cc. of the bromine if it has become weak from age or evaporation.

In our effort to check the accuracy of the histidine test we have run three series

of tests. One of us ran a series of one hundred twenty-eight tests in which there were ninety-six positives, all correct, and twenty-nine negatives, three of which were incorrect.

The second series consisted of sixty-three tests. In this series there were fifty-seven positives and six negatives. A later check proved that two of the positives and four of the negatives were incorrect (or 3.42 per cent). All of the patients of this series were suspected of being pregnant and had missed one or more expected menses.

The third series consisted of twenty-four patients with whom the clinical evidence did not corroborate the results of the histidine test. This series was checked by the Friedman test with following results: the histidine test was correct in nineteen instances and incorrect in eleven instances, or 62.5 per cent correct and 37.5 per cent incorrect. The Friedman test was correct in twenty-three instances and incorrect in one instance, or 95.8 per cent correct and 4.2 per cent incorrect.

Of course the tests we have run are too few to warrant a definite opinion on the value of the test but we believe if it is used in conjunction with clinical findings and is checked by the Aschheim-Zondek test when it fails to corroborate these findings it will prove a great aid to the correct diagnosis of pregnancy.

We would like to mention some of the difficulties we have encountered in connection with the histidine test and suggest some corrections which it might be possible to make.

First, in a test of this kind there can be no middle ground. Either it is positive or it is negative and time will prove which is correct. Therefore, it is imperative that we learn the least amount of histidine required in a given specimen for a diagnosis of pregnancy. It is also necessary that we have some method to bring about a uniformity in the concentration of the urine or be able to titrate the exact amount of histidine and calculate the twenty-four hour out-put. To accomplish these results would require a large number of accurate titrations on both pregnant and non-pregnant women.

Next, there should be a more accurate method to determine when we have added the proper amount of bromine to the urine specimen. The potassium iodide starch paper method would be accurate enough if there were a standard with which to make the comparison but without a standard it is our opinion that the variation in the amount of excess bromine is too great to give best results from the test.

Finally, when the test is finished there are two things necessary for the accurate reading of results. One is a uniform light and the other is a standard for comparison. We feel that we have met the light requirements by reading against a ground glass, back of which is placed a strong light. To prepare a standard from a known amount of histidine each time would add to the expense of the test as well as to the time consumed in its performance. However, it seems plausible that when the proper color for a standard is once established it can be reproduced in colored glass and handled in a method similar to the Sahli colorimeter.

CONCLUSION

We feel that this test, in our hands, has proven to be a comparatively accurate test, easily and rapidly done. However, we do not feel that this test should replace the Aschheim-Zondek or the Friedman modification.

We wish to thank Dr. Ira Brown Oldham, Jr., and Dr. Ira C. Wolfe, of Muskogee, for their kind cooperation in assisting us with the Kepler-Adler test.

Hyperinsulinism Associated With Calcified Tumor of the Pancreas With Surgical Cure

S. F. Herrmann and John A. Gius, Tacoma, Wash. (Journal A. M. A., April 24, 1937), cite a case of hyperinsulinism of a marked degree associated with a pancreatic calculus without gross adenomatous islet tissue. The fact that clinical cure followed surgical removal seems to establish the etiologic relationship. It is possible, however, that tumor tissue of microscopic proportions was destroyed at operation. On the other hand, the mechanism of the production of hyperinsulinism on the basis of a seemingly inert foreign body in the head of the pancreas has not been adequately explained on a physiologic basis. This subject is to be investigated further. The tumor was a calcareous mass, which could not be sectioned. No pancreatic tissue was found by the pathologist. Soft tissue surrounding the stony mass consisted of fat, connective tissue and several small lymph nodes. There seems to be an analogy between adenomas of the pancreas and of the thyroid. Both become calcerous and both may be associated with hyperfunction.

Treatment of Gonorrhea in the Male*

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CHAPTER IV.

ADJUNCTS TO TREATMENT

As has been mentioned in previous chapters, an early recovery from gonorrhea depends not so much on what specific local therapy is administered, but an equal responsibility rests on the patient as regards the hygienic care he exercises. If one could formulate on a percentage the importance of these two factors so far as cure is concerned, one would err little in allowing twenty-five per cent for the doctor's efforts and the balance to the patient. The patient should be constantly impressed with the fact that it is his cooperation in conjunction with the physician's treatment that an early cure is obtained. This cooperation from the patient must be gained, else the physician's efforts will be futile.

Probably if one could tabulate in relative importance the various cautions the patient must exercise in his daily life, the leading one would be sexual attitude. Sexual stimulation is probably the most potent factor of all, producing annoying relapses, complications, and disappointing chronicity of the disease. It must not be emphasized once but many times the necessity for the patient to refrain from all sexual stimulation, even to the point of controlling lascivious thoughts. Intense engorgement of the parts incident to erotic stimulation is the enemy of early cure. Self-discipline in this respect should continue until he is without question cured. Obviously, in the case of the married, separate beds is the only practical method of achieving this end.

Often one sees patients who manage very satisfactorily with their diseases for the first six weeks and seem to be conquering their infection splendidly. Then sexual relations are indulged in, or as it happens in more instances, they allow themselves to become stimulated without completing the act with the result that there occurs a flaring up of the infection which requires several extra weeks of treatment to abate.

Alcohol seems to have a serious detrimental effect on the individual who is suffering from gonorrhea. The drinking of several bottles of beer has been observed to be followed by a sudden activation of the infection even in cases that appear presumably cured. Acute posterior urethritis has often followed the imbibing of liquor by affected individuals. Certainly there is sufficient clinical experiences at hand to place the taboo on all intoxicating beverages for at least the first few months of the disease.

Regular meals, regular hours, sufficient sleep, moderate but restricted exercise, and a placid, unworrying morale are obvious hygienic instructions which aid in fortifying the individual's resistance toward all chronic diseases. The diet probably plays little importance in the cure of gonorrhea with the exception of counseling against those substances which in the process of excretion irritate the urethral mucosa. Peppers and highly seasoned sauces had best be abolished, but otherwise the diet differs little from the ordinary routine, provided it is taken with some regularity and of correct quality and quantity.

Urine is a very efficient irrigating medium that effectually keeps the urethra free from accumulations of pus. Copious quantities of water by mouth not only keep the urethra flushed by the frequent urinations, but it may aid in a few cases in preventing backward extension of the infection.

Alkalization of the system by the administration of citrates, bicarbonates, etc., has many adherents. It doubtless has little effect on the ultimate outcome of the case;

*Second installment of the serial "Treatment of Gonorrhea in the Male." The first installment appeared in the May issue of The Journal.

however, there seems to be an impression somewhat substantiated by clinical experience in acute stages of the disease, they help in maintaining urinary comfort.

Drugs administered for the purpose of making the urine antiseptic have been found for the most part to be of little value in the treatment of gonorrhea. A few doctors and many pharmaceutical houses advise their use, but the general experience has been found disappointing. Caprakol, pyridium, serenium, and methylene blue are a few of the more common examples. Methenamine, a very potent drug in the treatment of the majority of non-specific infections of the urinary tract, is definitely contra-indicated in gonorrhea. The liberation of formalin, incident to its excretion, is extremely irritating in gonorrheal infections.

However, despite the disappointing results obtained by mouth medication for gonorrhea, there has recently been introduced a drug which seems to hold a very distinct therapeutic value. This is sulfanilamide, or it is better known as prontylin. This drug was originally presented because of its curative effect on streptococcic infections. It was also found to be efficacious in meningicoccic infections and due to the close morphological similarity to the gonococcus it was felt a clinical trial in Neisserian infections would prove beneficial.

The drug is administered in doses of twenty to thirty grains daily; one or two five-grain tablets may be taken with a large glass of water after each meal and at bedtime. It seems to be relatively nontoxic with the exception of some gastric disturbance complained of on the part of a few taking the larger dosages. Symptoms such as nausea, vomiting, headache, dizziness, and sometimes an unexplainable slight rise in temperature are a few of the toxic manifestations. The production of sulphemoglobinemia has been reported as a rare complication. All of these disturbances seem to disappear promptly when the drug is stopped. The headache, vomiting and dizziness have been explained on the basis that sulfanilamide lessens the alkali reserve of the blood, producing an acidotic state. It has been recommended that if a mild antacid be given in conjunction with it, the symptoms are somewhat abated.

A brief clinical experience with sulfanilamide has shown results which are very satisfactory but not conclusive. In a few cases of acute gonorrhea in which it has been given, some have obtained marked improvement in their infections as observed by a cessation of the penile discharge and a clearing of the urine within three to four weeks of the onset of their disease. Six patients having chronic prostatitis of long duration who have been given the drug showed variable results; in two, the prostatic secretion became free of pus within ten days; two more stated they had gained marked relief from the perineal and back pain with which they had been previously bothered, however, examination of the prostatic secretion showed no marked change in the amount of pus as compared to past examinations. The results in two were unsatisfactory, and the type of medication was abandoned. In four instances of acute posterior urethritis incident to gonococcal infection, there was a marked relief from the frequency and stranguary soon after prescribing the preparation. There was also a lessening in the amount of pus in the voided urine specimens.

An investigation is now being made at the University Hospital, which will be reported later, on the bactericidal value of the drug when excreted in urine. Preliminary data indicate it has very definite bactericidal value in many of the commoner organisms that affect the urinary tract. This, however, does not explain its curative action in gonorrhea. Doubtless, following its administration there is some systemic effect on the defense mechanism of the body which inhibits their growth.

It must be emphasized the drug is yet in an experimental state, and its place, as well as limitations, are undefined. Further clinical observation is necessary to thoroughly evaluate its therapeutic status in the treatment of gonorrhea.

Sandalwood oil is another drug that seems to be of more than doubtful value in the relieving of distressing urinary

symptoms incident to the disease. Many have observed that when it is given in gonorrheal infection which is attended by excessive urethral irritation, especially on urination, it aids in alleviating these painful symptoms. Certainly it has no specific effect on the clinical course of the disease and should be used only for symptomatic relief.

The use of foreign protein therapy, which includes mercurochrome intravenously, dilute hydrochloric acid, milk preparations, seems to hold a definite place in the later stages of the disease, but it is difficult to see their rationale in the acute phases of the infection. For the first six weeks during which the patient's body is struggling with an excess antigen in the form of virulent gonococci they are best left out of the therapeutic regime.

As regards the care of the parts affected, the patient should be advised to keep the penis as clean as possible. The pus exuding from the urethra is at times extremely irritating to the mucosa of the glans penis and foreskin; annoying swelling of these parts results from carelessly allowing it to stay in contact with the tissues too long. The penis should be washed frequently and the discharge allowed to collect in a loose-fitting gauze dressing. One will find a most perfect device for this purpose in the well known tobacco sack dressing which is easily available in more convenient forms at drug stores, marketed as a sanitary dressing.

Before closing, a therapeutic adjunct useful in all stages of the disease is quite often forgotten but holds tremendous value, not only as a measure in obtaining relief from pain, but seems to be of possibly some curative value. That is the use of hot tub baths and hot soaks to the penis. The antiphlogistic effects of moist heat have been verified by numerous observers in the past. It cannot be emphasized too much that it should be used often, especially during the early stages of the disease. The good results from hot sitz-baths is especially evident when any hyperacute condition prevails. It relieves congestion, allays pain and makes the patient much more comfortable than he would otherwise be.

CHAPTER V

TREATMENT IN THE LATER STAGES OF THE DISEASE

Unfortunately, not all gonorrheal infections of the urethra yield to simple anterior injections. Obviously an infection limited to the anterior urethra presents an excellent outlook for early cure. One must realize, however, that simple anterior urethritis throughout the course of the disease is a rarity; posterior invasion at some time or other is the rule.

The physician must not be too pessimistic as regards a satisfactory outcome even when he observes the posterior structures involved. Due to the relatively less vulnerability of the posterior urethra towards the gonococcus, as compared to the anterior urethra, many cases spontaneously go on to complete recovery in a reasonable length of time with the treatment previously described. For this reason we do not advise early treatment of the posterior urethra even when infection seems grossly present. The instillation of medicine in the posterior urethra too early before sufficient immunity has been developed, encourages an exacerbation of the infection with the consequent result of deeper tissue involvement. It is better to continue with the routine therapy of the anterior urethra at the same time watching the progress of the case by the daily two-glass test until three or four weeks have elapsed. If the second glass shows a lessening in the amount of pus, the indication for posterior treatment becomes less definite. However, in a few there comes a time when one must recognize the necessity for treatment in this region in order to expedite recovery from the disease.

To dogmatically advise a definite time following the onset of gonorrhea before initiating posterior treatment is probably an error. The physician must be guided in this respect not only by the patient's response toward previous treatment, but also the appearance of the infection. Any tendency toward undue acuteness of the inflammatory process means treatment is definitely not indicated. A few may appear to benefit by local treatment within three or four weeks, and in others it may be advisable to wait twice this long. Possibly one could state as a general rule in most

cases if the urine constantly shows cloudiness in the second glass at the end of a month cautious attempts to treat the posterior urethra are indicated.

We achieve this by a posterior instillation of the same medication used in treating the front part of the channel; advising the patient to relax his urinary sphincter during the course of injection, and allowing the medicine to flow into and bathe the posterior urethra and bladder neck. A slight bit of pressure on the rubber bulb of the syringe will help in overcoming the tonic resistance of the sphincter muscle. Assuming the recumbent position will also be found a helpful aid in allowing the medicine to pass easily into the bladder. One may begin with only a syringeful but as time progresses several syringefuls may be injected. Only one treatment daily is necessary.

This simple procedure is continued for four or five days until it is proven no harmful effect in the form of an aggravation of the disease is likely. We then investigate the prostate for infection. The freshly expressed secretion is examined microscopically, and if more than ten cells to the high power field are found, prostatic massage is added to the therapeutic regime, preferably performed before instillation of the medicine. Massage should be done not oftener than every three to five days in a series of about six or eight and followed by a rest period of several weeks. This rest period should also include cessation from all local treatment of the urethra. One will find this two weeks' rest period the ideal time for the administration of vaccine.

At the termination of vaccine therapy the active attack on the prostatic infection is resumed. Frequently one will find little urethritis present at this time; the discharge very scant or even absent, and not rarely a clear urine will be present. When no discharge is present and the urine shows only a few shreds, it is probably better judgment to limit the number of urethral injections to a minimum or even abandon them altogether. There is no particular reason to subject a mucosa relatively free from inflammatory reaction to the daily insult of more or less irritating substances. It must be remembered urethral injections alone will at times keep a discharge active. No part of the treatment of gonorrhea is more abused than vaccine therapy. When used intelligently they are of inestimable value, but an indiscriminate application not only proves them disappointing, but productive of harm as manifested by an unyielding, stubborn infection. It must be realized that early in the course of an infection the individual's defensive mechanism is attempting to cope with an overwhelming dose of antigen in the form of virulent gonococci and their products. To give gonococcus vaccine at this time is to add insult to injury and seems to produce an inhibitory action on the normal immunologic response.

The reaction of the tissues toward the bacteria must arrive at a static condition to observe the beneficial effects of vaccine therapy. Administration of small doses of vaccine at such time tends to stimulate the cells to further complete a cure. In the earlier stages of the infection, vaccines should be used made from the pure culture of the organism. However, the older the infection the more value seems to be derived from the use of mixed cultures incorporating the staphylococcus and streptococcus. Practically always these organisms are in the background as contributory agents for chronicity.

Vaccines are always started in small dosages; one to two minims of the regular stock preparations containing 1,000,000 organisms to the centimeter. Each successive dose is increased very cautiously, given every third day until one-half centimeter or more can be administered at a time without reaction. One should constantly watch the effect of vaccine and be guided in the amount given by any severe local or systemic reaction. Quite often vaccine injected in larger doses than can be tolerated may flare the local urethral infection to activity, inducing a discharge for a few days. One should strive always to keep the dosage just below the point of tolerance.

Physicians are constantly besieged with various and sundry preparations both of a specific, but more often of non-specific nature which are advocated to be given hypodermically or intravenously for the

cure of gonorrhea. Invaluable as non-specific therapy has proved itself as an aid to the cure of many infectious conditions, it must be considered inadequate therapy when used as a sole method for the treatment of gonorrhea, judged by our modern day standards. Certainly one can hold no reproach for the physician who for some reason or other desires to use non-specific protein therapy as an adjunct in the cure of gonorrhea, especially in its later stages; but it is he we censure who carelessly advises a course of injections for the treatment of the disease without paying the least attention to the prostate or other infected structures. Injection therapy in itself certainly is less demanding of the doctor's time and for that reason more lucrative to his pocketbook but is either an admission of his ignorance of proper therapy or is professional culpability.

(To be continued.)

Registration Under Harrison Narcotic Act

On or before July 1, every physician registered under the Harrison Narcotic Act must reregister with the collector of internal revenue of each district in which he maintains an office or a place for the treatment of patients. Failure to reregister within the time allowed by law adds a penalty of twenty-five per cent to the annual narcotic tax payable at the time of registration and in addition makes the physician in default liable to a fine not exceeding $2,000, or to imprisonment for not exceeding five years, or to both. While the Commissioner of Internal Revenue has been lenient in the past in enforcing the criminal penalties provided by the act for tardy registration, continued disregard on the part of some physicians of the requirement of the act with respect to reregistration will inevitably lead to criminal prosecutions. In recent years the commissioner has given some negligent or recalcitrant physicans the choice between paying substantial sums by way of compromise in lieu of the penalties for their offense or, as an alternative, accepting criminal prosecution, with resultant publicity and liability to fines of indefinite amounts and possibly imprisonment. This was an act of grace on the part of the commissioner; under the law he might have instituted criminal prosecutions without allowing the offending physicians any choice in the matter. Physicians must bear the requirements of the act in mind. If tardiness in registration results in criminal prosecutions, hereafter, they must recognize that ample notice has been given them.—Journal A. M. A., May 22, 1937.

Observations of Etiologic Relationship of Achylia Gastrica to Pernicious Anemia:

The observations of W. B. Castle and Thomas Hale Ham, Boston (Journal A. M. A., October 31, 1936), on patients with pernicious anemia fail to sustain the conclusions of Greenspon. 1. Normal human gastric juice does not contain, on oral administration, an "antipernicious anemia principle" effective without contact with food (extrinsic) factor. 2. Hog stomach mucosa contains both a thermostable (extrinsic) factor and a thermolabile (intrinsic) factor presumably responsible for the activity of such mucosa and of whole desiccated hog stomach. 3. Incubation of normal human gastric juice for two hours at 37.5 C. in the presence of native pepsin and hydrochloric acid inactivates only a portion of its content of intrinsic factor. 4. Beef muscle (extrinsic factor) and gastric juice (intrinsic factor) administered without opportunity for contact are not effective in pernicious anemia. Greenspon's recent experiments have led to the following modified conclusions in respect to former observations: 1. The negative results of the administration of substances after incubation with gastric juice for longer periods than two hours at 37.5 C. at an acid reaction cannot be accepted. 2. Lack of extrinsic factor in substances so incubated with gastric juice is not established by negative results. 3. Preliminary incubations should not be employed in testing the blood-forming activity in pernicious anemia of mixtures of gastric juice and various substrates.

Metastatic Tumor of the Heart: Case Diagnosed During Life

Maurice A. Schnitker and Orville T. Bailey, Boston (Journal A. M. A., May 22, 1937), describe the case of a patient in whom cardiac disturbances developed resulting from metastatic carcinoma of the heart, which was diagnosed clinically. The primary tumor was in the right main stem bronchus and reached the heart by direct extension, with associated auricular flutter. Only one other instance of auricular flutter resulting from cardiac metastasis has been diagnosed before death, that one from a reticulum cell sarcoma of cervical lymph nodes (Fishberg's). A case of congenital rhabdomyoma of the heart and another of metastatic tumor of the pericardium had associated auricular flutter, but the neoplasms were not recognized in either instance during life. In the 3,570 necropsies performed in the Peter Bent Brigham Hospital (1913-1936) there have been in all nineteen instances of cardiac neoplasm, an incidence of 0.53 per cent. None of these except the one here reported were recognized during life. The authors' case presents an unusual opportunity to follow the development of neoplasm in the heart by repeated clinical studies, electrocardiograms and necropsy.

Medical Treatment of Meniere's Syndrome

Madelaine R. Brown, Boston (Journal A. M. A., April 3, 1937), states that six patients with Meniere's syndrome from the neurologic out-patient department of the Boston City Hospital and six from that of the Massachusetts General Hospital have been placed on a low sodium diet with the addition of ammonium chloride. On this regimen, over periods ranging from six months to twenty-two months, none of these patients have suffered a severe attack, although mild dizziness and a feeling of fulness in the head may remain. In four a lapse in therapy was followed by an attack. Two patients have been free from attacks, although therapy was discontinued after three months and one year respectively. Although one sufferer from dizziness due to hypertension was relieved by a low sodium diet, four patients complaining of vertigo unaccompanied by deafness were not relieved by the diet and ammonium chloride. An unexpected source of sodium appeared in the course of this study. Since these patients had nausea or vomiting it was quite natural that they should use sodium bicarbonate or compound effervescent powders. The apparently unsuccessful treatment of two patients was remedied by eliminating these medications.

THE JOURNAL
OF THE
Oklahoma State Medical Association

Issued Monthly at McAlester, Oklahoma, under direction of the Council.

Vol. XXX JUNE, 1937 Number 6

DR. L. S. WILLOUR.....Editor-in-Chief
McAlester, Oklahoma

DR. T. H. McCARLEY.....Associate Editor
McAlester, Oklahoma

Entered at the Post Office at McAlester, Oklahoma, as second-class matter under the act of March 3rd, 1879.

This is the official Journal of the Oklahoma State Medical Association. All communications should be addressed to The Journal of the Oklahoma State Medical Association, McAlester Clinic, McAlester, Oklahoma. $4.00 per year; 40c per copy.

The editorial department is not responsible for the opinions expressed in the original articles of contributors.

Reprints of original articles will be supplied at actual cost provided request for them is attached to manuscripts or made in sufficient time before publication.

Articles sent this Journal for publication and all those read at the annual meetings of the State Association are the sole property of this Journal. The Journal relies on each individual contributor's strict adherence to this well-known rule of medical journalism. In the event an article sent this Journal for publication is published before appearance in The Journal the manuscript will be returned to the writer.

Failure to receive The Journal should call for immediate notification of the Editor, McAlester Clinic, McAlester, Oklahoma.

Local news of possible interest to the medical profession, notes on removals, changes of addresses, births, deaths and weddings will be gratefully received.

Advertising of articles, drugs or compounds unapproved by the Council on Pharmacy of the A. M. A., will not be accepted.

Advertising rates will be supplied on application.

It is suggested that wherever possible members of the State Association should patronize our advertisers in preference to others as a matter of fair reciprocity.

Printed by News-Capital Company, McAlester.

EDITORIAL

ANNUAL MEETING SUCCESSFUL

Perhaps one of the most important and successful Annual Meetings of the Association was held at Tulsa this year, the Tulsa County Medical Society doing everything within their power to make the work of the Association progress smoothly and efficiently.

The accommodations at the Mayo Hotel were ample to take care of all phases of the Association's work as well as housing most of the members in attendance. The hotel management has always shown our Association every courtesy and this attitude of theirs is greatly appreciated.

Our guest speakers presented material that was much appreciated by the large number of doctors who heard them. The Scientific Sections, although not as well attended as at Enid, presented subjects that were highly instructive.

At the meetings of the Council and House of Delegates, as the minutes in this issue will show, business of great importance was transacted and the reports of the committees indicate that more has been accomplished by the Association in the past year than in any other year of our existence. The political activity of the Association, the past year, during the recent session of the Legislature, led to the passage of the Basic Science Law, and the obstruction of some vicious legislation that had been introduced by other interests. The passage of the Basic Science Law is the greatest forward step in the regulation of the healing art that has been placed upon the statutes of Oklahoma and not only should the medical profession but the citizenship of Oklahoma appreciate this accomplishment. The members of our Association should enlighten themselves as to the attitude of their respective legislators relative to our Legislative Program and see to it that those who supported these important measures are remembered should they present themselves for re-election. A great deal was said by the daily press relative to the report of the Council to the House of Delegates in which the remark was made that "we have spent a great deal of money," and those who opposed our legislation would like to construe this remark to indicate that legislation had been bought. This, of course, is not true as the only money which was spent was spent in a purely legitimate manner and while it was a great deal of money to us it was not a great deal in comparison to funds that are used by some other groups fostering legislation.

The endorsement of a Hospital Insurance Plan by both the Council and House of Delegates is a step in the right direction and if you will read the minutes of the House of Delegates you will find a copy of the resolution. If these plans and specifications are carried out it appears to us that it will help to solve the problem of the cost of hospitalization to those in the lower income brackets.

The attitude of Governor Marland to-

ward organized medicine in Oklahoma has been very friendly and a resolution approving the Governor's Highway Safety Law was unanimously passed by the House of Delegates and we are thankful indeed that we have a friend who is the chief executive of the state.

We have had the services of an Executive Secretary for our Legislative Committee during the past few months and a very complimentary resolution was passed by the House of Delegates in appreciation of the excellent service J. B. Harper has rendered. It is our sincere hope that some arrangements may be made by virtue of which we may be able to finance his office during the coming months.

With the induction into office of our new President, Dr. Sam A. McKeel, we will continue to have a very efficient man at the helm and one who will use his every effort to forward the interests of organized medicine in Oklahoma.

As we start a new year under the new administration let every member accept his individual responsibility and give your new officers the support that will be necessary if they are to accomplish the great good which is possible.

Editorial Notes—Personal and General

DR. GLEN W. McDONALD, Ada, has been appointed as director of the full time county health unit in Pontotoc county.

DR. J. T. LOWE, Mangum, has been appointed county health superintendent of Greer county.

DR. and MRS. J. A. MUNN, and DR. and MRS. L. S. WILLOUR, McAlester, were among the Oklahomans taking the boat trip from Galveston to New York, with a day stop off at Miami, Florida. They attended the meeting of the American Medical Association, Atlantic City, June 7th-11th.

DR. I. W. BOLLINGER, Henryetta, is reported ill with pneumonia.

DR. HENRY H. TURNER, Oklahoma City, attended the meeting of the American Medical Association in Atlantic City in June.

DR. JOHN D. CAMPBELL, Fairview, is leaving July 1st for Buffalo, New York, where he is accepting a residency in neuropsychiatry. He will probably be in the east several years.

DR. CHARLES K. MILLS, McAlester, took the examination for certification given by the American Board of Ophthalmology which was held in Philadelphia in June. He also attended the meeting of the American Medical Association in Atlantic City and attended the Chevalier Jackson Bronchoscopic Clinics also in Philadelphia.

DR. C. S. BOBO HONORED

On the evening of February 25th, a testimonial dinner was given Dr. C. S. Bobo at the McFarland Memorial Church in Norman, honoring this man who is a very distinguished member of the medical profession of Oklahoma, who had reached his eighty-first birthday. About ninety guests, members of the medical profession throughout the state, old friends of Dr. Bobo, and young men who were his students, were present.

Dr. D. W. Griffin, superintendent of the Central State Hospital, acted as toastmaster. Many speakers of prominence attested to the high esteem in which Dr. Bobo is held not only as a physician but as a citizen.

Dr. Bobo has been made a life member of his county medical society and the Oklahoma State Medical Association and will be recommended to the House of Delegates of the American Medical Association which meets in Atlantic City, for Affiliate membership in that organization.

He began his practice of medicine in Texas in 1884 and came to Oklahoma in 1898. He was president of the Oklahoma State Medical Association in 1907-1908 and has held the position of Dean of the Medical School of the University of Oklahoma. Since 1933 he has been director of student health service at the university and in many ways has served through his long and useful life in many important capacities both as a physician and citizen.

Works Progress Administration Notice

It is requested that the attending physician selected by the Works Progress Administration, Resettlement Administration, or National Park Service employee for treatment of traumatic injury sustained while in the performance of duty, should not render treatment on account of the Federal Government without first receiving written authority from some project official in the form of Special Form CA-16, Special Form CA-17, or some written notation citing the nature of the injury for which treatment is requested. This, of course, does not mean to apply to cases of extreme emergency, but

OBITUARIES

DOCTOR JOHN D. LEONARD

Dr. John D. Leonard died at his home in Wagoner, Okla., April 24, 1937.

Dr. Leonard was born at Bristol, Va., in 1884. He graduated from the University of Chattanooga, Class of 1909, coming to Oklahoma shortly after graduation.

Locating in the eastern part of the state, he served as full time health officer in Muskogee county for three years, removing to Wagoner where he lived for eleven years before his death.

Dr. Leonard served overseas during the World war with rank of first lieutenant.

He married Miss Margaret Smith of Bristol, Tenn., in 1909. His wife and one son, John, survive him.

where treatment is rendered on cases of extreme emergency, written authority should be furnished the attending physician as soon thereafter as possible.

It is also requested that physicians who have rendered medical service for traumatic injuries on account of the Federal Government and who have not received payment for these services within sixty days from the date that voucher form S-69 has been submitted, or where voucher form S-69 has not been submitted on cases discharged from treatment, that if the attending physician will notify the State Compensation Officer, Mr. Hamilton Bewley, 431 West Main Street, Oklahoma City, Oklahoma, or immediately contact the District Compensation Officer, an investigation will be made and the doctor will be advised as to the status of his claim for services.

TRANSACTIONS OF THE FORTY-FIFTH ANNUAL SESSION OF THE OKLAHOMA STATE MEDICAL ASSOCIATION, TULSA, MAY 10, 11, 12, 1937.

THE COUNCIL

May 10, 1937, 3 P. M.

Regular meeting of the Council called to order by the President-Elect, Dr. Sam A. McKeel, with the following members present: Doctors Aisenstadt, Fulton, Howard, Kuyrkendall, McKeel, McNeill, Risser, Speed, Templin, Walker and Willour.

On motion of Dr. Fulton, seconded by Dr. Howard, the Council went into executive session.

Minutes of meetings of the Council of February 1, 1937, April 5, 1937, and April 27, 1937, were read, and on motion of Dr. Kuyrkendall, seconded by Dr. Aisenstadt, were adopted.

It was reported by the Secretary that $500.00 from the General Fund had been sent to the Legislative Committee about three weeks ago and on motion of Dr. Speed, seconded by Dr. Howard, this expenditure was approved.

A few days ago, on solicitation of members of the Council, $1,000.00 was sent to the Legislative Committee for expenditure in Oklahoma City and on motion of Dr. Howard, seconded by Dr. McNeill, this expenditure was approved, and Dr. Willour's report was approved.

The Secretary then presented the statement of the receipts and expenditures of the Legislative Fund and on motion of Dr. Willour, seconded by Dr. Walker, this statement was referred to the Auditing Committee, composed of Dr. Kuyrkendall, chairman, and Dr. Aisenstadt and Dr. McNeill, and motion made and carried that the report of this committee be made a part of these minutes. The report follows:

> To The Council of the Oklahoma State Medical Association: We, your Auditing Committee, appointed by the Acting President, have examined the report of the Secretary-Treasurer as audited by Mr. J. K. Pemberton of McAlester and find the accounts in order and recommend its approval by the Council.
> May 10, 1937
>
> L. C. Kuyrkendall, Chairman,
> E. Albert Aisenstadt,
> Philip M. McNeill."

Dr. Kuyrkendall then presented the case of the LeFlore County Medical Society vs. Drs. S. D. Bevill and Neeson Rolle, in which the doctors had given notice of appeal to the Council relative to action of the County Medical Society against them. Drs. Bevill and Rolle were called throughout the Corridors of the sixteenth floor to appear before the Council and Dr. McNeill, after careful search, found it impossible to locate these gentlemen.

Dr. Shippey, Secretary of LeFlore County Medical Society, was then introduced by Dr. Kuyrkendall and presented a one-fourth page advertisement appearing in a local paper of that county, under date of April 2, 1937, with reference to solicitation of members. He also presented the minutes of the County Medical Society meeting at which time the doctors were expelled. After careful consideration by the Council motion was made by Dr. Walker, seconded by Dr. Fulton, that the action of the LeFlore County Medical Society be sustained by the Council. Carried unanimously.

At this time a statement was made by the Secretary as to the financial condition of the Association, and there followed a thorough discussion by all members of the Council as to finances for the ensuing year. It was of such length that it is impracticable to publish in the minutes.

The question of an assessment was brought up, and it was decided that an assessment could not be made without a referendum. After the discussion a motion was made that a Committee of three be appointed to formulate a plan for financing the Association for the ensuing year. This committee to be composed of Drs. Howard, McNeill and Fulton. This motion carried.

This committee was asked to report back to the Council at its next meeting.

Dr. Fulton was then appointed on motion of Dr. Walker, seconded by Dr. Speed, to make the report of the House of Delegates at its first meeting.

It was the concensus of opinion that the bonds which had been hypothecated should not be sold, but should be redeemed as soon as the financial condition of the Association made such action possible.

The Council then heard a resolution presented by Dr. McNeill relative to endorsement of the Association to have Hospital Insurance. This was adopted and recommended that it be referred to the Resolutions Committee of the House of Delegates.

On motion of Dr. McNeill, seconded by Dr. Kuyrkendall, the Council adjourned.

L. S. WILLOUR, Secretary.

COUNCIL MEETING

May 11, 1937, 1:30 P. M.

Meeting called to order by the President-Elect, Dr. Sam A. McKeel, with the following members present: Doctors Osborn, Speed, Fulton, Aisenstadt, Templin, McKeel, Walker, Tisdal and Willour.

The business of this meeting was to discuss a plan for financing the Association and carrying the expense of both the Association and Legislative Committee through another year. Suggestions for borrowing more money and plans for paying back that already borrowed for furtherance of legislative programs were discussed. After much discussion a motion was made, seconded and carried, for the Council to convene in Oklahoma City, May 23rd, at which time all matters of importance would be discussed and a plan for financing all business would be decided on.

The following amendment was made in the form of a motion "THAT the Finance Committee (named at the meeting of the Council, May 10, 1937, 3 P. M.) be empowered to act for the Council in authorizing the Secretary-Treasurer of the Association to borrow sufficient money as may be necessary for carrying on the affairs of the Asso-

ciation." Amendment by Dr. Aisenstadt, seconded by Dr. Speed, carried unanimously.

Motion made and carried that Dr. Osborn grant an interview to members of the press relative to the work of the Legislative Committee.

The following motion was made by Dr. Fulton, seconded by Dr. Speed, and carried:

"THAT Mr. Jess Harper's services be continued through the year, or until further action of the Council."

SUGGESTIONS:

THAT Mr. Jess Harper should write letters placing himself at the disposal of the County Societies, for appearance before them, or giving them any information they desired.

THAT each Councilor should make every effort possible to organize Auxiliaries in each County Society.

Dr. V. C. Tisday, Elk City, was appointed by the President to fill the unexpired term of Dr. H. K. Speed, as Councilor to District No. 2.

There being no further business the Council adjourned.

L. S. WILLOUR,
Secretary-Treasurer-Editor.

HOUSE OF DELEGATES

May 10, 1937.

Meeting called to order by the President-Elect, Dr. Sam McKeel, in the absence of the President, Dr. George R. Osborn.

First order of business was the reading of the minutes but since these had been published in the April Journal of last year, motion was made, seconded and carried that this be dispensed with.

The Chair then called for a report from the Council to the House of Delegates, which was presented by Dr. Fulton and is as follows:

"You will recall a year ago we talked it among ourselves and put it in the hands of the of the Legislative Committee to put over some legislation. We had a very fine committee composed of Drs. Speed, McLain Rogers and Barker. Drs. Speed and Rogers have been very active in this work but it was impossible for Dr. Barker to participate in these activities on account of the condition of his health. This committee had introduced and passed a Basic Science Law. They knew at the time it was going to take considerable money to put this legislation over, but the understanding was that no questions were to be asked as to the expense. They put this thing over and I know it cost plenty of money, but if you ask me how it was spent I can only say I know nothing about it.

"It was understood a year ago that this committee should have a free hand; we expected them to put over the Basic Science Law and they did it. There was another bill, Senate Bill 283, that had some vicious provisions in it that we were able to hold up in the Senate; there was also another bill that would have reduced our Medical Board to four members, one regular, one physio-medic, one homeopath, and one eclectic, thus leaving us in the minority. All of these vicious measures we have been able to defeat, however, in order to do this it was necessary to sacrifice our Registration Law. We appeal to you, for the welfare of the Association and medical profession of Oklahoma, to take this report and at this time raise no question as to the exact procedure."

On the motion of Dr. Fulton, duly seconded, this report was adopted.

Copies of the Annual Report of the Secretary-Treasurer-Editor were distributed and on motion, duly seconded, the report was accepted.

The President, Dr. Osborn, having appeared, called attention to the Committee Reports that had been published in the April issue of The Journal of last year, and asked that other reports be presented at the Tuesday morning meeting, for any discussion necessary.

He next appointed a Resolutions Committee, consisting of Drs. Phil McNeill, Paul Champlin and Shade Neeley. This committee to make their report at the Tuesday meeting.

A year ago there was an amendment to the Constitution amending Article 9, with regard to officers, and is as follows:

Section 1. The officers of this Association shall be a President, President-Elect, Secretary - Treasurer - Editor, Councilors, Speaker and Vice-Speaker.

Section 2. The Officers, except the Councilors, Secretary-Treasurer-Editor, Speaker, and Vice-Speaker of the House of Delegates, shall be elected each year. The terms of the Councilors, Secretary-Treasurer-Editor, Speaker and Vice-Speaker of the House of Delegates shall be for three years.

The amendment to the By-Laws, Chapter 5, relative to the duties of these officers follows:

Section 1. Should be amended to delete that portion reading "The President shall preside at all meetings of the House of Delegates."

Additional Section, Chapter V:

"It shall be the duty of the Speaker of the House of Delegates to preside at all meetings of the House of Delegates, and appoint all committees of the House of Delegates. The VICE-SPEAKER shall perform the above duties in the absence of the Speaker."

After some discussion of this amendment it was moved by Dr. Larrabee, seconded by Dr. Fulton, that the amendment be adopted. Carried unanimously.

Dr. Fulton then proceeded to make a speech to nominate someone as Speaker of the House of Delegates. He was ruled out of order by the President, as elections were to be held at the Tuesday meeting.

There being no further business the House adjourned.

L. S. WILLOUR,
Secretary-Treasurer-Editor.

HOUSE OF DELEGATES

May 11, 1937, 8 A. M.

The first order of business was roll call by Dr. W. A. Howard who reported sixty-six members present and voting.

All resolutions were then referred to the committee and nominations for President-Elect were called for.

On motion of Dr. Walker, Shawnee, the name of Dr. O. E. Templin, Alva, was presented, seconded by Dr. Adams, Hobart.

Dr. Osborn, Frederick, then presented the name of Dr. H. K. Speed, Sayre, which was seconded by Dr. Tisdal, Elk City.

On motion of Dr. Reed, Oklahoma City, the nominations were closed and the President, Dr. McKeel, appointed Drs. Ewing, Muskogee, and Bondurant, Oklahoma City, as tellers. The vote by ballot showed fifty-three votes for Dr. Speed and fourteen for Dr. Templin. On motion of Dr. Walker, seconded by Dr. Fulton, the Secretary was instructed to cast the entire vote of the House for Dr. Speed as President-Elect.

The next order of business was the election of a Speaker of the House and Dr. Fulton, receiving recognition of the Chair, asked permission to continue his speech of the night before, and placed the name of Dr. Horace Reed for this office. The motion was seconded by Dr. Walker.

Dr. Johnson, Pauls Valley, then presented the name of Dr. Osborn, Frederick, for consideration as Speaker of the House of Delegates.

Dr. Reed, first nominee, upon receiving recognition, in a few very well chosen words requested that his name be withdrawn, as he is already an officer of the Association, Delegate to the American Medical Association, and Dr. Fulton agreed to withdraw his name.

Dr. Reed made a motion that the nominations close and the Secretary was instructed to cast the entire ballot for Dr. Osborn as Speaker of the House of Delegates. Seconded by Dr. Bondurant, carried unanimously.

Dr. Glismann, Okmulgee, had tried to present the name of Dr. P. P. Nesbitt for Speaker of the House, but the Chair ruled him out of order as there was a motion before the House.

On a rising vote of thirty-six to twenty-two, the Secretary cast the ballot for Dr. Osborn as Speaker of the House.

The President then called for nominations for Vice-Speaker of the House, and Dr. Cook, Tulsa, then presented the name of Dr. Nesbitt for Vice-Speaker, On motion of Dr. Glismann, seconded by Dr. Bondurant, the nominations closed and the Secretary instructed to cast the ballot for Dr. Nesbitt as Vice-Speaker which he did.

Nominations for Councilor for the First District were then called for and the name of Dr. Templin, Alva, was presented by the Delegates of that district and he was unanimously elected to succeed himself.

Nominations for Delegate to the American Medical Association were then called for and Dr. Ewing presented the name of Dr. McLain Rogers, Clinton, to succeed himself. On motion, duly seconded, carried, the Secretary was instructed to cast the ballot for Dr. Rogers as Delegate to the American Medical Association.

The next order of business was the selection of an Annual Meeting place for 1938, and Dr. Ewing extended an invitation from the Muskogee County Medical Society for the State Meeting to be held in Muskogee.

Dr. Dale Collins, said that Oklahoma City would be available for the 1938 meeting should the House of Delegates decide to meet there.

Dr. Ewing made motion that Muskogee be designated as the meeting place for 1938. This was seconded and carried unanimously.

Dr. Osborn then informed the House of Delegates that the vacancy in the Council caused by the election of Dr. Speed would be filled by appointment of the President.

Next was presented the report of the Necrology Committee, which follows:

RESOLUTIONS—NECROLOGY COMMITTEE

We, the committee appointed by the President of the Oklahoma State Medical Association, beg to submit the following:

WHEREAS, since the Annual Meeting held in Enid, May, 1936, many members of the Association have passed to their reward, and realizing that "death may be nothing more than opening a door through which men pass away, as stars into the day," and not looking on death as a horrible climax to our tired and worn bodies, but rather a peaceful sleep, causes us to reflect on the words of Sir Frederick Hosmer.

I cannot think of them as dead,
Who walks with me no more
Along the path of life I tread—
They have but gone before.

And still their silent ministry
Within my heart hath place
As when on earth they walked with me,
And met me face to face.

Their lives are made forever mine.
What they to me have been
Has left henceforth its sign and seal
Engraven deep within.

Mine are they by an ownership
Nor time nor death can free;
For God hath given to Love to keep
Its own eternally.

THEREFORE, be it resolved that this Association hold in revered memory these physicians who have labored among us, and that it is with a feeling of deepest regret we mourn their passing, and

BE IT FURTHER RESOLVED, that this resolution be spread on the minutes of the meeting of the Association, and that a copy be sent to the families of the following deceased members.

Respectfully submitted,

Robert M. Anderson, Chairman,
Jas. L. Shuler,
Will C. Wait.

* * *

DEATHS

Oklahoma State Medical Association Since February, 1936.

Ambrister, J. C., Chickasha
Armstrong, D., Durant
Bishop, Jos. Patterson, Aline
Blair, Samuel, Apache
Breco, David, Ada
Brightwell, Gaines, Leedey
Chase, A. B., Oklahoma City
Chambers, M. E., Vinson
Cunningham, Samuel R., Oklahoma City
Dodson, W. O., Willow
Dunham, Howard C., Sulphur
Dawson, Bascomb B., Ada
Edwards, R. T., Oklahoma City
Echols, J. W., McAlester
Gregory, M. S., Oklahoma City
Harris, Chas. T., Kiowa
Herrod, Reuben Taylor, Oktaha
Hayes W. F., Claremore
House, Chas. Fleetwood, Walters
Hawkins, Jas. Clinton, Blackwell
Haynie, W. D., Kingston
Heitzman, Chas. W., Muskogee
Huckabay, C. R., Idabel

Hudson, W. K., Hartshorne
Johnson, H. C., Antlers
Jacobs, J. C., Miami
Keller, G. F., Oklahoma City
Kiebler, W. G., Enid
Linzy, J. H., Comanche
Lloyd, H. C., Hobart
Long, D., Duncan
McInnis, A. L., Enid
Miller, John Sinclair, Hugo
Muzzy, Wm. J., El Reno
Neer, Chas. S., Vinita
Nunnery, A. W., Chickasha
Palmer, T. D., Elk City
Perry, M. L., Tulsa
Pinnell, General, Miami
Robinson, J. C., Okmulgee
Ruhl, A. M., Edmond
Sands, A. J., Choctaw
Shackelford, Theron T., Haskell
Sosbee, John W., Stroud
Stone, DeWitt, Sayre
Todd, H. Coulter, Oklahoma City
Wagner, Howard Alonzo, Shawnee
Winter, J. D., Wynnewood
Walker, J. E., Shawnee
Watson, W. S., Okmulgee
Weedn, Alva James, Duncan
Watson, J. W., Ryan

* * *

On motion of Dr. Walker, seconded by Dr. Shuler, the House of Delegates stood in silence in reverence to honor our dead.

The Presiding Officer then called for nominations for honorary membership and the following were nominated from their respective Medical Societies and were elected to honorary membership. Drs. J. A. Jester, Elk City; P. L. Cain, Albany; C. E. Wann, Calera; C. S. Bobo, Norman, H. P. Wilson, Wynnewood; Wm. McIlwain, Lone Wolf; J. M. Ritter, Roosevelt; E. O. Barker, Guthrie; W. P. Hailey, Haileyville; McClelland Wilson, McAlester; S. M. Richey, Tulsa; W. H. Freeman, Hobart; J. W. Harms, Cordell; J. P. Jones, Dill City.

Dr. Aisenstadt made the following motion: "That hereafter all members presented for honorary membership in this Society, to be considered, will have to have their names presented in writing, signed by the Secretary of their respective County Society before they can be considered for honorary membership, and that these names be in the hands of the State Secretary at least thirty days before the Annual Meeting."

The motion, duly seconded, was adopted.

On motion of Dr. Reed, duly seconded, the Secretary was instructed to forward list of these honorary members to the Secretary of the A. M. A. for consideration as to their eligibility, for honorary membership in the A. M. A. Motion carried.

The report of the Resolutions Committee was called for and Dr. McNeill, the Chairman, read the following report:

RESOLUTION

WHEREAS, the public has come to recognize the necessity of competent hospital care in cases of illness or accident, and

WHEREAS, people in all walks of life can only be assured of adequate hospital service in case of illness or accident through some form of hospitalization insurance, and

WHEREAS, the plan of group hospitalization is becoming universally accepted and approved throughout the country, and

WHEREAS, the regular physician or surgeon is always desirous of having his patient provided with competent hospital facilities when necessary,

NOW THEREFORE BE IT RESOLVED that the Council of the Oklahoma State Medical Association urge the House of Delegates of the Oklahoma State Medical Association to

FIRST: Endorse the plan of insurance offered by any duly licensed insurance company in the State of Oklahoma which provides for the liquidation of reasonable expense incurred by any policy holder during hospitalization, provided the terms of the contract of the policy are not contrary to the laws of the State of Oklahoma; provided the terms of the contract of the policy in no way furnish medical or surgical attention, which includes clinical pathology, roentgenology and anesthesia, and if hospitals regularly employ pathologists, roentgenologists and anesthetists there shall be no reduction in regular rates charged for such services in that locality; and provided further that any person may have his choice of his physician or surgeon, or hospital.

SECOND: Establish a board of three members of the Oklahoma State Medical Association to be known as the Hospital Insurance Board, whose duties shall be to investigate the rates, plans, compliance with the insurance laws of the State of Oklahoma, the record of payment of claims and conduct of the policies of the company with relation to the medical profession and report the results of the investigation and findings, together with any recommendations, to the secretaries of the County Medical Societies in the counties of the State of Oklahoma. Members of said Board shall be appointed for three years in the manner of all standing committees as provided by the Constitution and By-Laws; the first member to serve for three years, the second for two years and the third for one year and thereafter for a three year term; and shall be confirmed by the action of the Council of the Oklahoma State Medical Association."

On motion of Dr. McNeill, seconded by Dr. Ewing, the above motion carried.

* * *

RESOLUTION

Adopted by the Joint Committee on Health Problems in Education of the National Education Association and the American Medical Association, February, 1937:

WHEREAS, The eyes and the sight of the school child are of the most vital importance for satisfactory school work, and their preservation for future health and efficiency depends upon their wise conservation during childhood; and

WHEREAS, The school has a grave responsibility for the conservation of eyesight among school children, and

WHEREAS, School administrators in many parts of the United States are frequently besieged with demands for admission into their school systems of eye examinations and eye-glass prescriptions by practitioners other than qualified doctors of medicine, and

WHEREAS, The eye, as an organ of vital necessity, requires careful conservation and deserves treatment only at the hands of trained and competent persons, and

WHEREAS, Teachers and nurses properly may and often do make rough tests of visual acuity in the classroom, but diagnosis of diseases of the eye and of disturbances of vision requires more extensive examination and often involves treatment other than the mere fitting of glasses, and

WHEREAS, Even the fitting of glasses often re-

quires the paralysis of accommodation through the use of drugs popularly known as "drops," now therefore be it

RESOLVED, That it is the sense of the Joint Committee on Health Problems in Education of the National Education Association and the American Medical Association, in meeting assembled at New Orlenas, February 23, 1937, that the safety of the eyes of school children, the adequate diagnosis of disease and the correct fitting of glasses require examination of children's eyes (beyond rough visual tests performed by teachers or nurses) by a licensed doctor of medicine, and upon his recommendation, by a medical specialist in diseases of the eye, properly known as an oculist or ophthalmologist.

On motion of Dr. McNeill, seconded by Dr. Puckett, the above resolution was adopted.

* * *

RESOLUTION

WHEREAS, The Committee on Post Graduate Medical Teaching requests the House of Delegates for authority to represent the State Association in requesting financial aid from the Commonwealth Fund of New York City in carrying on Post Graduate Medical Instruction in Oklahoma, and appropriating $2,000.00 from the Treasury of the State Association for cooperation and futherance of this work.

THEREFORE, BE IT RESOLVED That the House of Delegates vote favorably upon this request. Henry H. Turner, Chairman.

On motion duly seconded the above resolution was adopted.

* * *

RESOLUTION

WHEREAS, The Oklahoma County Medical Association has invited the Southern Medical Association to meet in Oklahoma City in 1938,

THEREFORE BE IT RESOLVED that the Oklahoma State Medical Association most heartily endorse and join the Oklahoma County Medical Association in this invitation, and urge its acceptance by the Council of the Southern Medical Association. Signed: Henry H. Turner.

On motion of Dr. McNeill, seconded by Dr. Neely, the above was adopted.

* * *

RESOLUTION

"We commend Governor E. W. Marland and the Sixteenth Legislature for the enactment of the Highway Safety Law.

"We approve the Governor's selection of a director, and we urge all citizens to support the organization of this new department so that it may function with highest efficiency, with its personnel selected and retained on a strictly merit basis."

On motion, duly seconded, the above was adopted.

* * *

RESOLUTION

WHEREAS, The Oklahoma State Medical Association has, during the past year, secured the services of Mr. J. B. Harper of Talihina, and

WHEREAS, This splendid man has ceaselessly and tirelessly worked for the interests of the Oklahoma State Medical Association, and

WHEREAS, This organization is appreciative of these efforts,

NOW BE IT RESOLVED That the House of Delegates of the Oklahoma State Medical Association in session assembled at Tulsa, Oklahoma, May 11th, hereby extend a vote of thanks to Mr. J. B. Harper.

On motion, duly seconded, the above was adopted.

* * *

RESOLUTION

WHEREAS, The Oklahoma State Medical Association has been represented in the House of Representatives and Senate of the State of Oklahoma by two members of this Association, and

WHEREAS, These two members have tirelessly worked for legislation sponsored by this organization;

NOW BE IT RESOLVED, That the House of Delegates of the Oklahoma State Medical Association in session assembled at Tulsa, Oklahoma, May 11, 1937, hereby commends and extends a vote of confidence to Drs. Louis Ritzhaupt of Guthrie and J. A. Morrow of Sallisaw, and a copy of this resolution be sent these two members and be included in the minutes of this body.

On motion, duly seconded, the above was adopted.

* * *

Dr. Willour then presented Dr. S. J. Wolfermann of Ft. Smith, President-Elect of the Arkansas Medical Society, and Fraternal Delegate. Dr. Wolfermann responded with the following remarks:

"Gentlemen:

"I am not going to make any particular speech. I just want you to know I consider it a pleasure and privilege to be here. I consider it an honor to bring you the greetings of the Arkansas State Society. After all, we are just one of a group of medical societies; we have lots of trouble. We always have in the past. I believe that with the motion that was just introduced, the same old story holds good there. If you get all ethical men to constantly, firmly and fairly stand together, you won't have any trouble with it. Now, with that I leave you to your work. I do want to say to you again that Arkansas extends to you very pleasant wishes, a joyful and profitable meeting, and I hope that each and everyone will carry home something worth while. I am glad to be here."

Mr. Jess Harper, Executive Secretary of the Committee on Public Policy and Legislation, was then presented to the House of Delegates and in a few remarks expressed his appreciation of his association with the organized medical profession of Oklahoma. He paid our Legislative Committee a much deserved compliment as well as complimenting the work in the Legislature of Representative Morrow and Senator Ritzhaupt.

The President then spoke as to Mr. Harper's work, expressing his sincere appreciation of the high, ethical and gentlemanly manner in which he had conducted his work.

Dr. Neely then presented the following resolutions:

WHEREAS, The members of the Legislative Committee of the Oklahoma State Medical Association have expended many hours of untiring effort in behalf of medical legislation at a very great sacrifice of their own personal time and means, and

WHEREAS, They were successful in having adopted a great part of the legislative program of the Oklahoma State Medical Association, now

THEREFORE, BE IT RESOLVED, That the House of Delegates of the Oklahoma State Medical Association extend to the Legislative Committee, Drs. C. B. Barker, McLain Rogers, and H. K. Speed, their vote of confidence and thanks of this body, and

BE IT FURTHER RESOLVED, That a copy of this resolution be spread upon the minutes of this Society and a copy be sent to each of the above named committee.

On motion, duly seconded, the above resolution was adopted.

* * *

RESOLUTION

WHEREAS, The Oklahoma State Medical Association has been well guided during the year 1937, through the efforts of our Legislative Committee, and

WHEREAS, This committee has one physician on it who has been so enthusiastic about legislation sponsored by this association, driving his own car for thousands of miles, neglecting his own practice for a considerable length of time and making many supreme sacrifices for the benefit of the Oklahoma State Medical Association,

NOW THEREFORE BE IT RESOLVED, First, that the House of Delegates of the Oklahoma State Medical Association in session assembled this 10th day of May, 1937, hereby goes on record as appreciative of the splendid work of DOCTOR McLAIN ROGERS. Second, the House of Delegates wishes to bestow upon Dr. McLain Rogers a life membership in the Oklahoma State Medical Association. Third, that a copy of this resolution be sent to Dr. McLain Rogers and this resolution shall be included in the minutes of this body.

Respectfully submitted,

MUSKOGEE COUNTY MEDICAL SOCIETY.

W. R. Joblin, President,
Shade D. Neely, Secretary.

Resolution introduced and passed in the Muskogee County Medical Society at its regular session, April 9, 1937. Instructions to delegates to introduce this resolution at House of Delegates of Oklahoma State Medical Association in Tulsa, May, 1937.

W. R. Joblin, President,
Shade D. Neely, Secretary.

The above resolution, on motion, duly seconded, was adopted.

* * *

RESOLUTION

WHEREAS, The Muskogee County Medical Society, on December 7, 1936, in regular session went on record as favoring the Bobst plan as outlined in the Hoffman-LaRoche monthly periodical of December, 1936, and

WHEREAS, This plan is roughly as follows: "That ethical pharmaceutical houses make donations totaling $400,000.00, this money donated to the American Medical Association without strings or reservations for the purposes of advertising possibly by radio on a nation-wide hook-up; that the names of these pharmaceutical houses never be mentioned or made known publicly in any advertising directly or indirectly; that this $400,000.00 be used annually; that a committee be formed by the American Medical Association and from among the pharmaceutical houses to work this plan out, and

WHEREAS, This County Medical Society believes that this is one of the best plans for informing the public which has been suggested, and that the American Medical Association should match dollar for dollar monies donated by these pharmaceutical houses,

NOW THEREFORE BE IT RESOLVED, By the Muskogee County Medical Society in regular session, this, the 19th day of April, 1937, that it specifically instructs its Delegates to the Oklahoma State Medical Association which meets in May, 1937, at Tulsa, Oklahoma, to present this plan before this House of Delegates and suggests that this House of Delegates instruct their Delegates to the American Medical Association to introduce this resolution in the House of Delegates of the American Medical Association, that they themselves become fully acquainted with this plan, and use their influence and support for this plan or some other better one for such a worthy undertaking.

Resolution offered April 19, 1937, by S. D. Neely, seconded by R. N. Holcombe, discussion, carried without dissenting vote.

W. R. Joblin, President,
Shade D. Neely, Secretary.

Resolution adopted.

* * *

RESOLUTION

BE IT RESOLVED By the Muskogee County Medical Society in regular session, April 19, 1937, that it approves and urges the passage of an act by the proper authorities within the American Medical Association establishing

1st: A National Medical Social Security Association. Its purpose being the protection of the aged and infirm members within the American Medical Association, and

2nd: A National Medical Protective Association for the benefit of the members of the American Medical Association, and

BE IT FURTHER RESOLVED, That the Delegates from this Society be instructed to present this resolution to the Oklahoma State Medical Association on May 11, 1937, and urge its adoption by them at that time. And, further, that the Delegates from the State Association to the American Medical Association meeting in June, 1937, be directed to present this resolution to that body and urge its adoption there.

On motion, duly seconded, the above was adopted.

* * *

Dr. Speed then introduced Mr. Clearman, who addressed the House of Delegates on legislative matters, making a very interesting and instructive talk.

The subject of fixation of fees for work done for clients of the Resettlement Administration was then presented by Drs. McNeill, Speed and Reed. After considerable discussion the following motion was presented:

"That the fee schedule, as adopted by the Council at a meeting in Oklahoma City, November 8, 1936, be rescinded, but that doctors in County Societies may feel at liberty to deal with the Resettlement Administration as they see fit."

The motion was seconded and carried unanimously.

On motion, duly seconded, the House of Delegates adjourned.

L. S. WILLOUR,
Secretary-Treasurer-Editor.

Report of Committee on Study and Control of Tuberculosis

The high death rate from tuberculosis in Oklahoma, the 1936 records showing considerable increase over 1935, indicates a need for more attention to this disease by the medical profession. The rate in Oklahoma has heretofore been lower than for the United States as a whole, but the 1936 figures put this state at about the average of the country in 1935; if the rate for the United States in 1936 shows the usual reduction Oklahoma may find its rate above the national average.

We believe one of the reasons for this poor showing has been that with a low tuberculosis rate, as compared to the rest of the country, physicians have not been as tuberculosis conscious as they should be. Diagnosis is too often made after disease is advanced. Admissions to the sanatoria in the minimal stage are not the rule.

We urge physicians to give consideration to the possibility of tuberculosis wherever there is the remotest chance that it may exist. We urge the use of all modern methods of diagnosis when there appears the need to search for obscure causes of illness. We recommend the proper use of the tuberculin test and x-ray, especially in children and young people, as a means of ferreting out tuberculosis before harm is done; and that these weapons be used in searching for carriers who are responsible for so much of the disease.

An aid to the tuberculosis situation the past year was the post-graduate course on tuberculosis held in Tulsa on September 29, 1936. An attendance of ninety physicians indicated a genuine interest in the care and treatment of tuberculosis. The response to this course leads to the conclusion that a similar program should be conducted each year.

Carl Puckett, Chairman,
F. S. Etter,
F. P. Baker.

News Notes of Woman's Auxiliary

The convention of the Woman's Auxiliary to the Oklahoma State Medical Association met in Tulsa May 10th, 11th, and 12th with headquarters at the Mayo Hotel. There were one hundred seventy-three registrations at the desk on the lobby floor of the hotel. The session opened with an Executive Board meeting and luncheon at the Twin Oaks Tavern at 12 o'clock noon on Monday, May 10th, with Mrs. Chas. R. Rayburn presiding. Five out of the seven county organizations were represented. At two o'clock a Study Conference was held when there was a general discussion of auxiliary work over the state. Each auxiliary representative told what program was most successful in her county and there was a delightful interchange of ideas.

On Monday evening with Mrs. Thomas H. Davis, general chairman, the Auxiliary to the Tulsa County Medical Society entertained the visiting doctors' wives with a dinner and fashion revue at the Tulsa Club. The one hundred four present were seated at small tables decorated with spring flowers. The fashion show sponsored by Sears' was modeled by Tulsa County doctors' wives. The latest styles from beach costumes to formal evening dresses were displayed to the best advantage by the models. Mrs. E. G. Hyatt was in charge of the revue. Mrs. Frank L. Flack presented the State President, Mrs. Chas. R. Rayburn, who made a short address and this was followed by the introduction of out of town guests. Lovely favors of pressed lavendar flowers were furnished by Brown-Dunkin Company. Organ music was played throughout the evening.

At ten o'clock Tuesday morning the annual business meeting was held in the Open Parlor at the Mayo. Excellent reports were given by the various county organizations. There is now a total membership of three hundred seventy-nine in seven county societies. The election of officers was held and the following officers will direct the affairs of the State Association during 1937-1938: Mrs. Hugh Perry, Tulsa, president; Mrs. Eugene Rice, Shawnee, vice-president; Mrs. Frank L. Flack, Tulsa, recording secretary; Mrs. W. S. Larrabee, Tulsa, treasurer; Mrs. N. E. Duncan, Forgan, historian; and Mrs. Edward D. Greenberger, McAlester, parliamentarian. Mrs. George H. Garrison, Oklahoma City, was elected pesident-elect. At 2:00 p. m. all out of town members were taken for a ride over the city.

On Tuesday evening the Tulsa County Medical Society entertained all the doctors and their wives with a reception and dance in the Crystal ballroom at the Mayo Hotel.

Mrs. Hugh Perry, the new president, called a post-board meeting at ten o'clock Wednesday morning. Several members of the new executive board attended and Mrs. Robert E. Fitzgerald, president of the Auxiliary to the American Medical Association, and Mrs. Frank M. Haggard, president of the Auxiliary to the Southern Medical Association, attended, offering many suggestions and answering numerous questions. There was an active discussion concerning plans for the coming year. Mrs. Fitzgerald and Mrs. Haggard had arrived on a Wednesday morning train and a breakfast had been given in their honor at the Mayo.

The convention closed with a luncheon at the Tulsa Country Club. There were ninety-one present. Dr. Sam A. McKeel, Ada, the new state president, gave an address on how the auxiliary can be a help to a medical society. Mrs. Fitzgerald and Mrs. Haggard gave very interesting talks about the auxiliaries in other states. The afternoon's entertainment was concluded with a review of the play, "High Tor" by Maxwell Anderson, by James Mansfield Dinkinson. The next year's convention will be at Muskogee. Mrs. Frank L. Flack.

Hyperthyroidism Masked by Symptoms of Acute Abdominal Catastrophe

William E. Robertson, Michael G. Wohl and Harold F. Robertson, Philadelphia (Journal A. M. A., February 20, 1937), consider instances in which the acute symptoms and signs referable to the abdomen are due entirely to the overactivity of the thyroid. The symptoms referable to the abdomen may be so severe as to suggest a surgical catastrophe. In two of three such cases the abdominal signs mimicked acute appendicitis. One of these patients was operated on and a normal appendix was found. The pains in the third patient were localized in the left upper quadrant of the abdomen. Postmortem examination showed no abdominal pathologic condition to account for the pains. Differentiation is not always possible since hyperthyroid patients may harbor lesions of the gastro-intestinal tract. When appropriate therapy is applied, the abdominal symptoms disappear with other signs of hyperthyroidism. In the surgical cases the signs and symptoms usually progress.

Torulosis in Man

Early surgical removal of a circumscribed area of torulosis seems as logical to Kenneth W. Taber, Pasadena, Calif. (Journal A. M. A., April 24, 1937), as the early removal of carcinoma. Surgery is not indicated in torulosis of the central nervous system or in generalized pulmonary torulosis—such as in the case that he reports—any more than surgery would be indicated in generalized carcinomatosis. The removal of a localized lesion either with the cautery or with the radio knife may well be considered as the treatment of choice. Whether the occasional pathogenesis of torulae depends on occasional variations in their own virulence, on the hypersensitivity, or on the lowered resistance of the persons affected is not yet proved. But it would appear from the facts in hand that both factors play a part.

ABSTRACTS : REVIEWS : COMMENTS *and* CORRESPONDENCE

EYE, EAR, NOSE AND THROAT

Edited by Marvin D. Henley, M.D.
911 Medical Arts Building, Tulsa

Paget's Disease of the Eyelid Associated With Carcinoma. Dr. A. Hagedoorn, University Eye Hospital, Amsterdam. The British Journal of Ophthalmology, May, 1937.

The case reported is that of a woman, age fifty-six, with a chief complaint of severe pain in the left eye. She gave a history of trachoma and treatments since childhood. The left tarsus and the right lacrimal sac had been previously extirpated. She had had previous attacks of iritis in the left eye.

At this time the left eye had a blepharitis, dacryocystitis and a thick viscous secretion. The conjunctiva was thick and red, and appeared "greasy." The cornea was irregular and had a dense old pannus. She had light perception; tension normal. An extirpation of the sac was done and followed with conservative treatment.

Two years later the eye was excised with the posterior part of the lids and the conjunctival sac in order to make the socket suitable for an artificial eye. Histological examinations were made of sections obtained from this material. These showed a xerosis of the conjunctiva due to the chronic trachoma. Changes in the normal anatomy are described which included obliteration of glands and the presence of an occasional cyst. Inflammatory changes showed infiltration with lymphocytes and plasma cells especially under the xerotic epithelium.

Interesting anomalies of a blastomatous nature are described at length and in detail. Six different sections are reproduced, microphotograph. After a discussion of these it is noted that at this time carcinoma seemed probable.

A year later a small tumour occurred under the upper eyelid. Carcinoma was confirmed by this recurrence. Exenteration of the orbit was done. No other primary malignant tumour or metastasis was discovered. Histological examination of sections was done.

The author says: "This carcinoma is interesting on account of its being associated with lesions often called pre-carcinomatous, not described hitherto in ophthalmology. The fact that the pathological condition of the epithelium is generally restricted to the deeper layers, the absence of dyskeratosis, akanthosis and hyaline degeneration, the Meibomian and sebaceous glands are in favour of the diagnosis 'Paget's disease.'"

There was present here some features resembling Bowen's disease.

Septic Thrombo-Phlebitis of the Lateral Sinus With Metastases. Calhoun McDougall, M.D., F.A.C.S., Atlanta, Ga. The Eye, Ear, Nose and Throat Monthly, May, 1937.

The author reports three cases of septic thrombophlebitis of the lateral sinus with pyemic metastases in the joints, in children that recovered following operation.

Otological literature of the past ten years shows thirty cases of lateral sinus thrombosis with joint and muscle metastases. There were three mortalities.

Fifty per cent mortality is the estimate in all cases of sinus thrombosis, where all cases are considered alike, without regard to time of operation, type of infecting organism, or secondary infection.

The formation of the thrombosis is discussed as is also the different types of thrombosis, i.e., the obliterating thrombus and the mural or parietal thrombus.

The diagnosis is not always easy because the large proportion of the cases do not follow a typical course. Double mastoiditis in children presents the greatest difficulty. Different diagnostic points are discussed.

Symptoms are variable but signs of septic infection such as daily range of temperature from normal to 104 or 105 degrees, chills, sweats, diminution in red cells and hemoglobin, high leucocytosis and metastatic lesions in viscera or superficial structures are some of the most common.

A form of treatment is outlined. The author's summary and conclusions are:

1. Blood cultures are of a great aid in diagnosing lateral sinus thrombosis. Over fifty per cent of the diagnosed cases show negative growth after repeated cultures. We must not put too great dependence on the result of a negative blood culture in making a diagnosis of this infection.
2. Whole blood transfusions, with properly typed donors, should be given to all septicemias with a low red blood cell count and low percentage of hemoglobin.
3. Intravenous injections of mercurochrome, 220 soluble, are a valuable therapeutic aid in septic thrombo-phlebitis when given intelligently, early, often and not in too large a dose at one time.
4. It is my observation from these cases and several others recently reported, that joint and muscle metastases occur mostly in children and where they exist as a complication of septic thrombo-phlebitis of the lateral sinus, the prognosis is favorable under proper treatment. These lesions also more frequently follow sinus thrombosis from acute infections of the middle ear rather than chronic otitis.

Twenty Years' Experience With Iodine Powder (Sulzberger) in the Conservative Treatment of Aural and Nasal Suppuration. Dr. M. D. Lederman, New York. The Laryngoscope, February, 1937.

The author's point in regard to aural infections is that "unless active indicative symptoms of a fulminating character exist, it is our duty to em-

ploy this simple, effective, conservative treatment and avoid surgical intervention."

The time or duration of the aural infection is not one of the deciding factors in consideration of radical surgery. He cites the case of a physician with discharging ears for nearly fifty years to illustrate his contention "that with careful attention to proper preparation of the middle ear, attic, eustachian orifice and hypotympanic space, before the powder is applied, numerous instances of prolonged chronicity of middle ear involvement have remained dry, with useful hearing, notwithstanding the fact that radical surgery had been suggested by others."

Beck is quoted: "Surely we agree that even if a radical mastoid operation is performed, in many instances much remains to be desired in obtaining a cessation of the discharge and a conservation of hearing." Beck remorks further that "he has yet to see a case of chronic suppuration of the middle ear, that he has treated and continued to observe, develop any serious intracranial complications. There are always present signs and symptoms in plenty of time to warn and place indications for an operation."

Personal experiences of the writer as well as otologic literature tend to confirm Beck's opinion. In these chronic ears there is usually present a mixed infection. Vaccine therapy is not particularly indicated. The author sometimes used a non-foreign protein to stimulate resistance.

To obtain satisfactory results with this treatment there are several factors which must be considered. Preparation of the field for the powder must be thorough. This takes time as it not only includes a dry middle ear but also the surrounding areas such as the attic, eustachian tube, orifice and hypotympanic space. Any debris, accumulated secretion, cholesteatoma and granuloma must be thoroughly exenterated. Nasal and postnasal pathology must be corrected. X-rays are advisable although the local picture is of more importance, according to the author.

Ear irrigations are not used because of the moisture producing a lowered tissue resistance. Suitable cotton applicators are used to cleanse and dry the field, going through the drum perforation when possible. If the perforation is large, the result of the treatment is more rapid, because more powder can be introduced at each sitting. Using a suitable cannula or glass with the aid of gentle suction, may help in cleansing the middle ear. Care must be taken as this sometimes produces a disturbance of the vestibular labyrinth. Following the cleansing ninety-five per cent alcohol is then used. When dry the powder is insufflated into the middle ear. The amount of secretion determines the frequency of the treatments. The author says the majority of his patients receive two treatments a week.

One per cent powder is used initially and depending on the results obtained increased up to as high as ten per cent. The action of this form of medication is discussed. The importance of a dry, clean field before introduction of the powder is stressed. The author reports the use of this treatment on mastoid fistulae successfully. A few cases are reported.

Nasal infections are also treated with this powder. The author details his nasal treatment.

Vascular Adenoma of the Bronchus. A. M. Zamora and N. Schuster, London. The Journal of Laryngology and Otology, May, 1937.

Due to the routine bronchoscopic exeminations, benign tumours of the bronchi are not considered so rare as they were in former years.

Epithelial growths (carcinoma) are the most common in this location but there is a connective tissue tumour which is not uncommon. These can be treated successfully if the diagnosis is made early enough.

There have been about twenty-five cases reported which the laryngologist and pathologist have regarded as benign adenomas of the bronchus. Doubtless others reported under a different nomenclature would fall in this group as now classified.

Symptomatically there are two groups, according to the amount of bronchial obstruction. With a slow growth the patient may be symptomless or only have a slight cough. Expectorated blood in small amounts may be present repeatedly. When obstruction of the bronchus has occurred, there may be a variety of symptoms depending on the degree and location of the growing obstruction.

Mechanically Chevalier Jackson (1930) gives three types of bronchial obstruction: stop valve (complete), by-pass valve (diminished amount of air passing in and out), and check valve (air passing in one direction only, in or out). Atelectasis or emphysema, in any degree is thereby produced, with the subsequent secondary changes. The vascularity of the adenomas make it possible for them to change rapidly from one type of obstruction to another. A variety of physical signs may be produced. Of the five cases examined two are reported in detail. Drawings and sections of the tissue are shown.

The characteristic appearance is that of a round, congested generally submucous mass. There is a freedom of movement to the end of the bronchoscope which is not so evident in malignancies.

Mechanics enter into the treatment. Entire removal of the growths is rendered more difficult by their vascularity, i.e., free bleeding. The use of radon seeds placed in and around the growth is probably the treatment of choice since this does away with the bleeding. The growth is reduced in size or obliterated entirely. Even if not entirely obliterated, but just reduced, the patient is afforded much relief from his symptoms.

A typical histological specimen is described. The characteristic vascularity may confuse one with haemangioma and endothelioma.

The prognosis is good for if the removal is effected completely there is no recurrence. There is no proper encapsulation and metastases have been recorded.

SURGERY AND GYNECOLOGY

Abstracts, Reviews and Comments from LeRoy Long Clinic
714 Medical Arts Building, Oklahoma City

Swelling of the Arm Following Radical Mamectomy. By James Ross Veal, New Orleans. The Journal of the American Medical Association, April 10, 1937, Page 1236.

The author discusses the history and the literature of the subject of post-operative odema of the arm.

"By means of the introduction of stabilized thorium dioxide into the median basilic, the basilic or the brachial vein I have found it possible to visualize the entire brachial, axillary and subclavian venous system, as well as their collateral veins. As a result, I have been able to demonstrate points of constriction of occlusion in the axillary vein and to say with a fair degree of positiveness that this vein does or does not play a part in the

production of the post-operative edema in any given case."

Upon this basis of his study he has devised a triple classification for post-operative oedema of the arm: (1) lymphatic obstruction, (2) axillary vein constriction or occlusion and (3) combined lymphatic and venous obstruction.

The various classifications are discussed and the technique of this vasography is carefully outlined.

The author's summary is quoted below:

"1. Edema of the arm following radical removal of the breast may be due to lymphatic obstruction, to venous obstruction, or to a combination of the two factors. The present small series of twenty cases indicates that venous obstruction is the most common cause.

"2. Obstruction of the axillary vein is due to various causes, the chief of which are the pressure of the malignant growth itself in its primary or secondary manifestations, scar formation, and the impingement of fat folds.

"3. Constriction may occur only when the arm is dependent and may disappear when the elevation of the arm restores the patency of the vein.

"4. A collateral circulation may develop adequate to take care of the venous return.

"5. Venography with stabilized thorium dioxide is of value in determining the cause of the edema, but no procedures have yet been devised to remedy it. The wisdom of prophylaxis is therefore obvious."

The author has stressed the prophylactic measures to be employed, particularly an attempt to keep the axillary area as free from scarring as possible, and the very gentle handling of the axillary vein during operation. Wendell Long.

Technical Considerations in the Treatment of Acute Perforated Peptic Ulcer. H. P. Totten, Los Angeles, Calif. Western Journal of Surgery, Obstetrics and Gynecology, April, 1937, Page 194.

Acute free perforation of peptic ulcer constitutes one of the most urgent surgical emergencies. The treatment of this intra-abdominal catastrophe consists of an operation which is concerned primarily with the avoidance of a fatality. This fact takes precedence over all other considerations. In view of the fact that simple closure of the perforation is the least time consuming and least traumatizing procedure which fulfills the fundamental requirement in treatment, namely removal of the source of peritoneal contamination, it should be the procedure of choice in the hands of the average surgeon when a definite contra-indication to its employment does not exist. Simple closure tends toward a lower immediate mortality and the late results are surprisingly good.

Since the majority of ulcers which perforate into the free peritoneal cavity are located close to the pyloric ring, the surgeon is not infrequently confronted with the possibility that the infolding necessary for adequate closure of the perforation may cause complete occlusion of the pyloric outlet. In such cases the author uses a form of pyloroplasty which he describes. The intrinsic value of pyloroplasty for perforated ulcer lies in the fact that it may be quickly done upon an acutely ill patient as a life saving operation, in place of a more radical and extensive procedure, such as gastric resection, when simple closure of the perforation alone does not fulfill the surgical requirement.

The field of application for the pyloroplasty described is limited, but the indications are definite. Its use is limited to ulcer in close proximity to the pyloric ring on either the duodenal or the stomach side. The author describes the advantages of his operation as follows:

A. Removal of pyloric obstruction if present, as well as the ulcer and surrounding scar tissue.

B. Destroys permanently the action of the pyloric sphincter by removal of the anterior one-half or more of the pyloric ring, thus relieving spasm, putting the tissue at rest and providing for permanent adequate regurgitation of duodenal contents into the stomach which is necessary for neutralization of excess gastric acidity.

C. It does not require duodenal mobilization.

D. The operation is simple, quickly performed, and is done at the site of the pathological tissue.

E. It does not disturb normal anatomical and physiological relation and eliminates the possibility of jejunal ulceration which is a distinct hazard in gastro-enterostomy.

F. By removal of all indurated scar tissue, normal tissues only are approximated at the suture line.

This procedure is a modification of the Horsley and Judd pyloroplasties and embraces those features of each which seem best adapted to the treatment of the pathological condition present. The author thinks that by substituting this procedure for simple closure, the mortality rate will be lowered in that type of case in which, due to extensive induration and friability of the tissue surrounding the perforation, there is danger of leakage at the suture line or post-operative pyloric obstruction.

His conclusions are as fallows:

1. The choice of treatment for acute perforated ulcer is simple suture.

2. He describes a method of simple suture (interrupted mattress sutures rather than purse string).

3. A pyloroplasty which may be used for perforated ulcer near the pylorus is described—one which does not require duodenal mobilization. He thinks that this procedure may be used with slight risk where simple suture appears inadvisable.

4. Thorough aspiration of the peritoneal cavity with suprapubic drainage of the pelvis is considered an essential part of the operative procedure. Then post-operatively, the use of the indwelling Levine tube and adequate amounts of intravenous glucose in salt solution, contribute to a smooth convalescence. LeRoy D. Long.

Total Thyroidectomy in Angina Pectoris and Congestive Failure. Three Year Post-Operative Review of Sixteen Patients. By Morris Dinnerstein, et al. The American Journal of Surgery, May, 1637, Page 421.

This is a long, careful, detailed report of the study of the sixteen patients who had the operation of total thyroidectomy done. The report comes from the first medical and surgical (Columbia University) division of Bellevue Hospital in New York.

The authors conclude as follows: "Our studies to date comprising but sixteen patients who have been followed for a period from twelve to thirty-two months are offered only as material to be added to the growing mass from which ultimately conclusions regarding the essential value of total thyroidectomy for the treatment of heart disease will be drawn.

"A group of patients suffering from cardiac decompensation or angina pectoris, intractable to the usual medical measures, can be distinctly helped by total ablation of the thyroid gland. The benefit produced is sufficiently great in a large enough

proportion of cases to justify such a radical surgical procedure. Such a major operation can be carried out in patients suffering from serious heart disease with an astonishing low operative mortality rate.

"The successful outcome of any case depends first, on a very careful selection and thorough preoperative study of the patient, and secondly, on an organization which can assure a continuous post-operative supervision and follow up. Ambulatory patients who have been subjected to total thyroidectomy for the improvement of heart disease unquestionably require more frequent and closer observation than those not operated upon because all of these patients require the administration of desiccated thyroid extract; the determination of adequate dosage demands careful and frequently repeated observation and repeated basal metabolic rate and blood cholesterol determinations.

"The operative procedure of total thyroidectomy as a means of treating angina pectoris has opened paths of approach to the study of cardiac pain and the conditions surrounding its occurrence heretofore unavailable and has enlarged and will continue to add immeasurably to our knowledge of the subject." LeRoy D. Long.

Surgery in Patients of Advanced Age. By Barney Brooks, M.D., Nashville, Tennessee. Annals of Surgery, April, 1937, Page 481.

This contribution is mainly made up of a series of tables showing the results of surgical operations on two hundred eighty-seven patients over seventy years of age in Vanderbilt University Hospital from 1926 to 1935. The following general headings indicate the classification, or grouping by the author, followed by the approximate operative mortality in each group:

1. Ophthalmologic operations, including cataracts, iridectomy, etc., sixty-five patients, with a mortality of one.

2. Otolaryngologic operations, including mastoidectomy, excision tumor larynx, etc., six patients, without mortality.

3. Genito-urinary operations, including various types of prostatectomy, resections, suprapubic cystostomy, etc., sixty-eight patients, with a mortality of fifteen.

4. Abdominal operations including exploratory laparotomy for inoperable cancer, gastrostomy, cancer oesophagus, gastro-enterostomy for cancer, resection of stomach, cholecystectomy, appendicectomy with drainage, etc., thirty-three patients, with a post-operative mortality of eleven.

5. Hernia operations, including radical cure ventral hernia, strangulated femoral hernia and strangulated inguinal hernia, etc., twenty patients, with a mortality of one.

6. Mammary gland operations, including radical and simple mastectomy, ten operations, without mortality.

7. Rectal operations, including hemorrhoids, fistulae, peri-rectal abscess, etc., six patients, with a mortality of one.

8. Neurolgic operations, including operation on Gasserian ganglion, craniotomy, chordotomy, etc., eleven patients without mortality.

9. Operations for circulatory disease, including amputation for gangrene, operation for varicose veins, etc., eleven patients, with a post-operative mortality of two.

10. Operations for superficial neoplasms, including excision of neoplastic growths about the head and neck, thirty-nine patients, with a post-operative mortality of one.

11. Thyroid operations, three patients, with a mortality of one.

12. Bone and joint operations, eleven patients, without mortality.

13. Incision and drainage of infections of various types, including carbuncle, five patients, with a mortality of one.

14. Gynecologic operations, three patients, with a mortality of one.

15. Chest operations, one patient, drainage lung abscess, with a mortality of one.

16. Plastic operations, one patient only, plastic for burns, without mortality.

COMMENTS

An analysis indicates a post-operative mortality of something over twelve per cent in the two hundred eighty-seven patients, but it is striking that most of the mortality occurred in certain groups. The information relative to the post-operative mortality might be roughly recapitulated as follows:

1. Ophthalmologic operations, mortality less than two per cent.

2. Otolaryngologic operations, mortality zero.

3. Genito-urinary operations, mortality approximately twenty-three per cent.

4. Abdominal operations, mortality thirty-three and one-third per cent.

5. Hernia operations, mortality five per cent.

6. Mammary gland operation, mortality zero.

7. Rectal operations, mortality about seventeen per cent.

8. Neurologic operations, mortality zero.

9. Operations for circulatory disease, mortality about eighteen per cent.

10. Operations for superficial neoplasms, mortality about two and one-half per cent.

11. Thyroid operations, mortality thirty-three and one-third per cent.

12. Bone and joint operations, mortality zero.

13. Incision and drainage of infection, mortality twenty per cent.

14. Gynecologic operations, mortality thirty-three and one-third per cent.

15. Chest operations, mortality one hundred per cent.

16. Plastic operations, mortality zero.

It is well understood that the hazards after seventy years of age frequently depend upon senile alterations, particularly in connection with cardio-vascular-renal insufficiencies. The high mortality following operations in the genito-urinary group is illustrative.

While the author does not mention it, the type and the expertness of the administration of the anesthetic agent is of extreme importance in the decadent period of life. The extremely low post-operative mortality in the ophthalmologic group, where most of the operative procedures are done under local anesthesia, is strikingly significant.

It is interesting and instructive to contrast the post-operative mortality of thirty-three and one-third per cent in the abdominal operations group with the mortality of five per cent following operations for the cure of various types of herniae, and suggests in a very strong way the possibility of grave results following the trauma of the intra-abdominal contents in connection with many, if not most of intra-abdominal procedures. In the

average operation for hernia there is usually no necessity for operative trauma beyond the immediate site of the operative procedure.

LeRoy Long.

Drainage of the Abdominal Cavity in Operations for Perforated Peptic Ulcer. By Eldridge L. Eliason, M.D., and John P. North, M.D., Philadelphia, Pennsylvania. Annals of Surgery, April, 1937.

This is a very practical article in which the authors advocate drainage after operations for perforated peptic ulcer, and very good and sensible reasons are given for the advocacy.

Several important questions are answered in a brief, but very effective way. For example, reference is made to the oft-repeated statement that a drain in the abdominal cavity is ineffective after a few hours because of adhesions about it. The authors say, "in spite of this it is certain that a wide area of the abdomen is drained. This is especially true in the first few days after operation, when the inflammation is still marked and the voluminous exudate prevents peritoneal adhesions. Adhesions between structures surrounding the drain develop only as the inflammation is reduced in severity. At this time also comes the reduction in the area which is affected by the drain."

The authors say that statistics seem to argue against the practice of drainage, but immediately follow up this statement by the following: "It is a mistake to compare statistics. As has been stated, statistics are of value only to the man making them. Until all writers use the same language, so to speak, comparisons are inconclusive. One writer's mortality figures are based on the premise that a surgical death must happen in seven days, and be directly due to the surgical condition. If the patient dies of pneumonia three weeks later, it is not a surgical death. This diversity of time limit is known to range from forty-eight hours, entire hospital stay, days, weeks or even months. Two of our cases, for example, died on the thirty-ninth day and the forty-eighth day, respectively."

Answering the argument that the contents of the upper gastro-intestinal tract which escape through a perforation are sterile, the authors present proof that "careful bacteriologic examinations do not bear this out." In connection with that question, the common cause of disaster, namely, peritonitis, is indicated, and the authors say that "it is a condition which conceivably may be helped or prevented by drainage."

It is the practice of the authors to place a soft cigarette drain at the site of the perforation, the drain emerging through a stab puncture at a dependent point, and a similar drain is placed between the liver and the diaphragm. In addition, it is the practice of the senior author (Eliason) to place a suprapubic drain into the pelvis when there is extensive contamination.

COMMENTS

As old as the subject is, there is no more important question than that of drainage in connection with infectious processes, and processes which should be regarded as potentially infectious, within the abdominal cavity. If the careful surgeon who is honest intellectually and who has an analytical mind will go through the records of the hospital in which he works he will find, without the least difficulty, the evidences of disasters traceable to the lack of facilities for drainage. Any surgeon with his eyes open knows that it is utterly foolish to say that drainage of the abdominal cavity is not useful even for days after operative procedures where they are indicated. One very important requirement is to remember that when a drain is placed in position it should be let alone for at least a week.

LeRoy Long.

The Evaluation of Abdominal Symptoms in the Diabetic. By Frederick A. Bothe, M.D., and Joseph T. Beardwood, Jr., M.D., Philadelphia, Pennsylvania. Annals of Surgery, April, 1937, Page 516.

In this article the authors direct attention to the distinction between the term diabetic acidosis and diabetic coma. Diabetic acidosis precedes diabetic coma, and abdominal symptoms are present in a large number of patients. The symptoms are nausea, vomiting, abdominal pain and tenderness, and usually fever and leukocytosis. "The same group of symptoms and clinical findings is also characteristic of an acute abdominal condition and without a careful history, uranalysis, blood sugar, and plasma CO^2 determination, a differential diagnosis of these conditions may be impossible." Attention is directed to polyuria and polydipsia as early symptoms which may exist twenty-four or forty-eight hours before the abdominal symptoms. The acidosis develops in a gradual way but the abdominal symptoms which develop later may be of sudden onset.

"The clinical appearance of patients suffering from diabetic acidosis is frequently not unlike that of acute intestinal obstruction in that they are toxic, markedly dehydrated, have abdominal distention, pain, nausea, vomiting and obstipation."

There are several case reports. The first concerns a married woman forty-four years of age who had been a known diabetic, but careless in connection with the control of the disease. She had been vomiting and suffering from obstipation for three days before coming to the hospital. For twenty-four hours there had been vague abdominal symptoms, and twelve hours before admission there was a sudden severe pain in the right upper abdomen. The temeprature was 103. Leukocyte count 31,000. The tentative diagnosis in the receiving room was intestinal obstruction. There was marked dehydration. There was some tenderness and rigidity in the right upper abdomen. There was sugar in the urine, a blood sugar of 420 mg. per 100 cc. and the CO^2 was seventeen volumes per cent. There was a definite diagnosis of diabetic acidosis. Under proper management, the abdominal symptoms had disappeared six hours after admission.

Another case is that of a boy of thirteen in whose case diabetes was not suspected. There was severe sharp pain in the right lower abdomen accompanied by nausea and vomiting. Temperature 103.2. Leukocyte count 29,000. He was sent to the hospital with a diagnosis of acute appendicitis. A preoperative urinalysis showed glycosuria. The blood sugar was 730 mg. per 100 cc. and a CO^2 of fifteen volumes per cent. The diagnosis of appendicitis was abandoned. Under proper management, there was a rapid disappearance of fever, leukocytosis and abdominal symptoms.

The following case, reported by the authors, is illustrative of the necessity of proper investigation. A man seventy-two years of age had had mild diabetes for some years, but it troubled him very little. He came to the hospital with a history of abdominal pain and constipation for three days. The pain had been worse during the last twenty-four hours, and there had been vomiting. There was great distention of the abdomen. It was believed that there was an intestinal obstruction and an emergency operation was performed. No obstruction was found. The next morning the blood sugar was 373 mg. and CO^2 was twelve volumes

per cent. He died six hours later of diabetic acidosis.

The authors make the statement that there is no satisfactory explanation for the abdominal symptoms in diabetic acidosis. They make the statement, too, that the abdominal symptoms are usually not as severe as would be found in a suspected surgical lesion, but they mimic the symptoms associated with acute surgical lesions to such an extent that there is room for confusion and disaster.

The authors indicate that sometimes diabetes and surgical lesions may co-exist. Here is an example reported by them. A man of fifty-two had had diabetes for eight years. He had a rather mild pain in the right lower abdomen, and with it there was slight tenderness. There was a temperature of 99. There was no rigidity. He was observed several days. On the fourth day a mass was felt in the right lower abdomen. There had not been any increase in symptoms. When he came to the hospital there was a temperature of 99, a leukocytosis of 13,000, blood sugar 303 mg., plasma CO^2 fifty-four. He was operated upon. There was a large appendiceal abscess. "Here in spite of a large amount of pus, no acidosis had developed and the symptoms were so mild that the extent of the lesion was not recognized." The following are the conclusions of the authors:

"1. Ninety-six or seventy-four per cent of one hundred thirty-six cases of diabetic acidosis presented the abdominal symptoms of nausea, vomiting and abdominal pain, which are associated usually with leukocytosis and fever.

"2. Acidosis should be ruled out in any diabetic presenting abdominal symptoms before surgical intervention is undertaken.

"3. Acute abdominal conditions occurring in diabetics do not seem to produce as severe abdominal symptoms as the underlying pathology would indicate or as developed in a non-diabetic under similar conditions.

"4. Surgery should not be undertaken with a CO^2 of less than forty volumes per cent, and if the emergency will permit, the CO^2 should be elevated to forty-five or fifty-five volumes per cent."

LeRoy Long.

PLASTIC SURGERY

Edited by

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Toxic Formation of Burned Tissues. By W. C. Wilson, J. S. Jeffrey, A. N. Roxburgh and C. P. Stewart. From the Dept. of Surgery, University of Edinburgh, and the Clinical Laboratory, Royal Infirmary, Edinburgh.

Extensive burning injuries in man give rise to severe systemic disturbances wnich change in nature, and evidently also in causation, as time elapses after the infliction of the injury, thus the clinical course of an extensive burn may be divided into several more or less distinct stages. (1) Initial shock, (2) secondary shock, (3) acute toxemia, (4) septic toxemia and (5) healing. The clinical features of each stage have been described and discussed in previous publications. We are concerned here only with the third stage of acute toxemia, which begins between six and fifty hours after injury, which bears a close resemblance to other toxic conditions, and which not infrequently ends in death at about seventy hours from the time of the burn.

The etiology of acute toxemia has not yet been definitely established. Results of investigations are recorded in this paper.

REVIEW OF PREVIOUS EXPERIMENTAL INVESTIGATIONS

Avdakoff, in 1876, was first to report that the blood of a toxic animal was poisonous to a healthy animal.

Pfeiffer, in a convincing series of experiments showed that the urine and blood serum of burned rabbits became toxic to mice, guinea pigs, and also to rabbits.

The toxic principles had both neuro-toxic and necro-toxic actions; a study of their chemical characteristics, however, revealed little more than they were labile substances with some properties in common with nucleoproteins and snake venom. Robertson and Boyd demonstrated the toxic nature of the blood of burned animals. Underhill and his associates attributed the systemic disturbance of external burns mainly to increased concentration of the blood; they also held that absorption of a toxin from burned tissues was highly improbable. Underhill and Kapsinov disagreed with the results secured by Robertson and Boyd as to the toxin theory.

METHODS

The experiments were carried out on rabbits. When excessive heat is applied to the skin of a rabbit there is no blistering, but a considerable quantity of oedema fluid accumulates in the subcutaneous tissues; swelling is obvious at one hour and increases up to twenty-four or thirty-six hours, after which slow absorption begins. Very mild degrees of injury by heat are followed by hyperemia and slight oedema, which disappears in a few days. After exposure to higher temperatures oedema is more conspicuous and lasts a week or longer; the skin, however, finally regains its normal condition except for a persistent scaliness, sometimes a few isolated areas of necrosis. Following still more severe injury, the affected skin dies, and is finally thrown off as a dry, wrinkled, black slough; eventually such areas are invaded by micro-organisms. Our object was to produce by the application of heat an accumulation of oedema fluid without necrosis of the skin, without injury to the internal organs by the direct action of heat.

In rabbits the skin of the abdomen was shaved and cleansed by ether and alcohol over an area comprising about one-sixth of the total skin surface. Ether anesthesia, aseptic precautions, midline incision, and the skin of the area together with the subjacent platysma muscle dissected up as two lateral flaps. Heat applied to deep surface of flaps by a very brief exposure to the diathermic current; the active electrode was a flat disc about one cm. in diameter. The incision was closed and in most instances the burned area was protected by collodion applied to the external skin surface. In other experiments the injury was affected by a jet of steam applied to the external skin surface, by either method an injury of the required seventy was obtained. The animals subsequently showed no special untoward symptoms.

At varying intervals after burning, the oedema fluid which had accumulated was collected in the following manner. The animal was anesthesized, the area cleansed with ether, the skin and oedematous subcutaneous tissue dissected off, leaving behind a vertical strip on either side of the operative incision, and as much free oedema fluid as possible was collected. When the burned area had been ex-

cised the animal was killed. The excised tissue was cut into small pieces and the oedema fluid expressed through a Buchner filter with suction attached. Ten to twenty cc. were obtained from each animal in this way.

The toxicity of oedema fluid was tested by intravenous injections (into an ear vein) by subcutaneous, and intraperitoneal injection in unanesthetized rabbits, and by intraperitoneal injection in mice.

RESULTS

TABLE I.—Results of Intravenous Injection of oedema fluid.

Injections	Total animals	Died within ten days	Died after ten days	Ill but survived	Not obviously affected
A. Oedema fluid removed at					
4 hours	6	0	0	0	6
6 hours	2	1	1	-	-
12 hours	2	2	-	-	-
24 hours	6	2	-	2	2
27 hours	2	1	1	-	-
48 hours	44	38	2	3	1
B. Oedema fluid removed at 48 hours, passed through Seitz filter	15	7	-	-	8

CONCLUSIONS

(1) Oedema fluid which accumulates in a burned area gradually acquires toxic properties; when collected at forty-eight hous after burning it is frequently lethal to healthy animals of the same species. (2) The development of the toxicity is independent of the action of bacteria; there is evidence that autolysis of the injured tissue is the responsible mechanism. (3) A study of the actions of toxic oedema fluid suggests the presence of more than one toxic component, and that the proportions of the components vary in different samples. (4) The effects produced include toxic action on the nervous system, circulatory depression, and degeneration of liver cells. (5) The toxic principles are associated namely with the globulin fraction. The evidence at present available indicates that the more active principles are higher protein derivatives. (6) The relation of these results to the etiology of acute toxemia of burns in human cases is mentioned. Features which require further investigation are indicated.

COMMENT

The authors are to be congratulated on a very fine bit of experimental work. The evidence here leaves little doubt but that oedema fluid is toxic. This work also helps one to understand why some very extensive burns that do not penetrate deeply can be managed by the immediate use of tannic acid or the tannic acid silver nitrate technique. These agents fix a large amount of the oedema fluid so that the toxic effects are avoided. The fact that the oedema fluid gradually becomes more toxic is significant for the reason that means should be taken early to handle the toxemia, namely fluids and general supportive treatment.

The authors discuss the pathology at length. They point out that there is a toxic effect on the nervous system, circulatory system, and finally a definite degeneration of the liver cells.

The Allantoin Treatment of Ulcers

Since the usual type of treatment has been unsatisfactory in many cases of superficial ulcer which often develops into a deep one involving the subcutaneous tissues and even resulting in a periostitis of the underlying bone, Theodore Kaplan, New York (Journal A. M. A., March 20, 1937), suggests the use of allantoin. Since the action of allantoin lasts only as long as the solution is in contact with the wound, it can therefore be easily controlled. Its effect is entirely local and overgrowth of granulation tissue may be readily checked. The speed with which the necrotic base is converted into a granulating area is remarkable. After the first week the wound assumes the appearance of a healthy granulating ulcer, and day by day new islands of granulation tissue can be seen springing up. Pain, which often accompanies these wounds and is a disabling factor, ceases almost immediately with the application of allantoin. Patients are ambulatory under this treatment. It acts locally as long as allantoin is in contact with the wound. Allantoin seems to have the same curative effect on chronic ulcers as the introduction of maggots, and it is less troublesome for the physician to administer and less disturbing to the patient than the use of insects.

Electrical Alternans: Report of Two Additional Cases

The two cases that are the subject of the report by Jacob G. Brody and Phillip L. Rossman, Youngstown, Ohio (Journal A. M. A., March 6, 1937), include one case of electrical alternans with demonstrable pulsus alternans and one case in which pulsus alternans was not demonstrated. Electrical alternans consists of a regular alternation at equal intervals in contour or amplitude, or both, of successive phases of the electrocardiographic record. White says that electrical alternans accompanying pulsus alternans is rare; the QRS or T waves may rarely alternate in amplitude although not always in the same direction as in the arteriogram. Electrical alternans, like pulsus alternans, is a sign of reduced myocardial reserve. It is of greater significance at slow or moderately increased heart rates than in extreme tachycardia. It may vary in degree, it may be continuous or transient. Electrical alternans, like pulsus alternans, is also found following premature contractions in some cases.

Comparative Efficiency of Commonly Used Flavoring Agents

Harold N. Wright, Minneapolis (Journal A. M. A., March 20, 1937), tested a group of commonly used flavoring agents on approximately 600 individuals to determine their relative efficiency in disguising various types of disagreeable tastes. Considered purely as pleasant tasting vehicles the syrups of prepared cacao and raspberry are the flavors of choice of the largest percentage of individuals. Second choices are the syrups of orange, cherry, sarsaparilla and citric acid. The syrups of raspberry, eriodicyton and prepared cacao are the flavors of choice in disguising the taste of bitter drugs such as alkaloids. The syrups of cinnamon, orange and sarsaparilla are the most effective agents in disguising the salty taste of such drugs as ammonium chloride and sodium bromide. The syrups of raspberry and prepared cacao are the flavors of choice in disguising the taste of tincture of digitalis. The most efficient "all-purpose" flavoring agents of the group studied are the syrups of prepared cacao and raspberry.

ROSTER

Oklahoma State Medical Association
1937

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DUNNINGTON, W. G. ..... Cherokee
HARRIS, G. G. ..... Helena
HUSTON, H. E. ..... Cherokee
LANCASTER, L. T. ..... Cherokee
LUDLUM, E. C. ..... Carmen
SLATON, F. K. ..... Helena

ATOKA

CLARK, J. B. ..... Coalgate
FULTON, J. S. ..... Atoka
HIPES, J. J. ..... Coalgate

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DEVANNEY, P. J. ..... Sayre
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WHARTON, J. T. ..... Durant

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JOHNSON, WALTER ..... Ardmore
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WOODS, L. B. ..... Ardmore

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BAINES, SWARTZ ..... Tahlequah
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DUNLAP, E. B. ..... Lawton
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GOOCH, L. T. ..... Lawton
HAMMOND, F. W. ..... Lawton
HATHAWAY, E. P. ..... Lawton
JOYCE, CHAS. W. ..... Fletcher
KERR, GEO. E. ..... Chattanooga
KNEE, L. C. ..... Lawton
LUTNER, THOS. R. ..... Lawton
MALCOLM, J. W. ..... Lawton
MARTIN, CHAS. M. ..... Elgin
MASON, W. J. ..... Lawton
MITCHELL, E. BRENT ..... Lawton
PARSONS, O. L. ..... Lawton

COTTON

BAKER, G. W. ..... Walters
COTTON, W. W. ..... Walters
JONES, M. A. ..... Walters
McKINNEY, H. ..... Temple
SCISM, MOLLIE F. ..... Walters
STEPHENS, F. G. ..... Temple

CRAIG

ADAMS, F. M. ..... Vinita
BAGBY, LOUIS ..... Vinita
BAUM, E. ELDON ..... Vinita
BRADSHAW, J. O. ..... Welch
DARROUGH, J. B. ..... Vinita
ELAM, B. L. ..... Centralia
GASTINEAU, F. T. ..... Vinita
HERRON, A. W. ..... Vinita
JOHNSON, L. G. ..... Vinita
LEHMER, ELIZABETH ..... Vinita
MARKS, W. R. ..... Vinita
MITCHELL, R. L. ..... Veterans Hospital, Muskogee
STOUGH, D. B. ..... Vinita
WALKER, C. F. ..... Grove

CREEK

BISBEE, W. G. ..... Bristow
COFFIELD, A. W. ..... Drumright
COPPEDGE, O. C. ..... Bristow
COPPEDGE, O. S. ..... Depew
COWART, O. H. ..... Bristow
CROSTON, GEO. C. ..... Sapulpa
CURRY, J. F. ..... Sapulpa
HAAS, H. R. ..... Sapulpa
HOLLIS, J. E. ..... Bristow
JONES, ELLIS ..... Sapulpa
KING, E. W. ..... Bristow
LAMPTON, J. B. ..... Sapulpa
LEWIS, P. K. ..... Sapulpa
LONGMIRE, W. P. ..... Sapulpa
McCALLUM, C. L. ..... Sapulpa
McDONALD, C. R. ..... Mannford
MOTE, PAUL ..... Sapulpa
NEAL, WM. J. ..... Drumright
REESE, C. B. ..... Sapulpa
REYNOLDS, E. W. ..... Bristow
REYNOLDS, S. W. ..... Drumright
SCHRADER, CHAS. T. ..... Bristow
SCHWAB, B. C. ..... Sapulpa
SISLER, FRANK H. ..... Bristow
SMITH, WENDELL L. ..... Drumright
STARR, O. W. ..... Drumright
WELLS, JOHN M. ..... Bristow
WHITE, EDW. E. ..... Oilton
WILLIAMS, J. CLAY ..... 208 Philcade Bldg., Tulsa

CUSTER

ALEXANDER, C. J. ..... Clinton
ALLEN, FRANK W. ..... Point Isabel, Texas

BAGLEY, JAMES A. ..... Clinton
BASINGER, W. I. ..... Butler
BOYD, T. A. ..... Weatherford
CUNNINGHAM, CURTIS B. ..... Custer City
CUSHMAN, HARRY B. ..... Clinton
DEPUTY, ROSS ..... Clinton
DOLER, C. ..... Clinton
EDWARDS, E. C. ..... Clinton
FRIZZELL, J. T. ..... Clinton
GAEDE, D. ..... Weatherford
GOSSOM, K. D. ..... Custer City
HINSHAW, J. R. ..... Butler
LAMB, ELLIS ..... Clinton
LAMB, LEALON ..... Clinton
LOYD, E. M. ..... Taloga
McBURNEY, C. H. ..... Clinton
PAULSON, A. W. ..... Clinton
ROGERS, McLAIN ..... Clinton
RUHL, N. E. ..... Weatherford
RYAN, W. A. ..... Thomas
ST. PETER, M. A. ..... Custer
VIEREGG, FRANK R. ..... Clinton
WAIT, W. C. ..... Clinton
WILKINS, A. N. ..... Leedey
WILLIAMS, GORDON D. ..... Weatherford
WOOD, J. G. ..... Weatherford

GARFIELD

BAGBY, E. L. ..... Enid
BAKER, R. C. ..... Enid
CHAMPLIN, PAUL B. ..... Enid
COTTON, LEE W. ..... Enid
DUFFY, FRANCIS M. ..... Enid
GILL, W. W. ..... Enid
GREGG, O. R. ..... Enid
FEILD, JULIAN ..... Enid
FRANCISCO, GLENN ..... Enid
FRANCISCO, J. W. ..... Enid
HARRIS, D. S. ..... Drummond
HAMBLE, V. R. ..... Enid
HINSON, BRUCE R. ..... Enid
HINSON, T. B. ..... Enid
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MERCER, J. WENDALL ..... Enid
MILES, G. O. ..... Enid
NEILSON, W. P. ..... Enid
NEWELL, W. B. ..... Enid
PIPER, A. S. ..... Enid
RHODES, W. H. ..... Enid
RHUDE, EVELYN ..... Enid
ROBERTS, C. J ..... Enid
ROBERTS, D. D. ..... Enid
SHANNON, H. R. ..... Enid
SHEETS, MARION E. ..... Enid
SWANK, J. R. ..... Enid
TALLEY, EVANS E. ..... Enid
VANDEVER, H. F. ..... Enid
WALKER, JOHN R. ..... Enid
WATSON, J. M. ..... Enid
WILKINS, A. E. ..... Covington
WOLF, E. J. ..... Waukomis

GARVIN

ALEXANDER, ROBT. M. ..... Paoli
CALLAWAY, JOHN R. ..... Pauls Valley
GREENING, W. P. ..... Pauls Valley
GROSS, J. T. ..... Lindsay
JOHNSON, G. L. ..... Pauls Valley
LINDSEY, RAY H. ..... Pauls Valley
MONROE, HUGH H. ..... Lindsay
PRATT, CHAS. M. ..... Lindsay
ROBBERSON, JR., MARVIN E. ..... Wynnewood
ROBBERSON, M. E. ..... Wynnewood
SHI, A. H. ..... Stratford
SHIRLEY, EDWARD ..... Pauls Valley
SULLIVAN, C. L. ..... Elmore City
WINTER, J. D. ..... Wynnewood

GRADY

BARRY, W. R. ..... Alex
BAZE, W. J. ..... Chickasha
BONNELL, W. L. ..... Chickasha
BOON, U. C. ..... Chickasha
COOK, W. H. ..... Chickasha
COX, C. P. ..... Ninnekah
DOWNEY D. S. ..... Chickasha
EMANUEL, L. E. ..... Chickasha
EMANUEL, ROY ..... Chickasha
GERARD, G. R. ..... Chickasha
LEEDS, A. B. ..... Chickasha
LITTLE, AARON ..... Minco
LIVERMORE, W. H. ..... Chickasha
MARRS, S. O. ..... Chickasha
MASON, REBECCA H. ..... Chickasha
McCLURE, H. M. ..... Chickasha
MITCHELL, C. P. ..... Chickasha
PYLE, OSCAR S. ..... Chickasha
RENEGAR, J. F. ..... Tuttle
WOODS, L. E. ..... Chickasha

GRANT

HARDY, I. V. ..... Medford
LAWSON, E. E. ..... Medford
LIVELY, S. A. ..... Wakita

GREER

BORDER, C. L. ..... Mangum
BORDER, G. F. ..... Mangum
CHERRY, G. P. ..... Mangum
GILLILAND, JAMES O. ..... Mangum
HOLLIS, J. B. ..... Mangum
LANSDEN, J. B. ..... Granite
LOWE, J. T. ..... Mangum
MEREDITH, J. S. ..... Duke
NELSON, H. J. ..... Granite
OLIVER, W. D. ..... Mangum
PEARSON, LEB. E. ..... Mangum
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HARMON

HUSBAND, WM. G. ..... Hollis
JONES, JAMES E. ..... Hollis
LYNCH, RUSSELL H. ..... Hollis
YEARGAN, WM. M. ..... Hollis

HUGHES

BENTLEY, J. A. ..... Allen
BUTTS, A. M. ..... Holdenville
BUTTS, IMOGENE ..... Holdenville
CASEY, E. A. ..... Wetumka
DAVENPORT, A. L. ..... Holdenville
DIGGS, G. W. ..... Wetumka
FLOYD, W. E. ..... Holdenville
FORD, R. B. ..... Medical Arts Bldg., Oklahoma City
FRYE, HARRY ..... Holdenville
HAMILTON, S. H. ..... Non
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HOWELL, H. A. ..... Holdenville
MORRIS, R. D. ..... Allen
MUNAL, JOHN ..... Holdenville
PRYOR, V. W. ..... Holdenville

STONER, R. W. ..... Wetumka
TAYLOR, W. L. ..... Holdenville
WALLACE, C. S. ..... Holdenville

JACKSON

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HIX, JOSEPH B. ..... Altus
MABRY, EARL W. ..... Altus
McCONNELL, L. H. ..... Altus
REID, JOHN R. ..... Altus
SPEARS, CLAUD G. ..... Altus
STARKEY, WAYNE ..... Altus
TAYLOR, ROBT. Z. ..... Blair

JEFFERSON

BROWNING, W. M. ..... Waurika
COLLINS, D. B. ..... Waurika
DERR, J. I. ..... Waurika
EDWARDS, F. M. ..... Ringling
HOLLINGSWORTH, J. T. ..... Waurika
MAUPIN, C. M. ..... Waurika
MAUPIN, CLINTON S. ..... Waurika
MINGUS, F. M. ..... Loco
WADE, L. L. ..... Ryan

JOHNSTON

CLARK, GUY ..... Milburn
LOONEY, J. T. ..... Tishomingo

KAY

ARMSTRONG, W. O. ..... Ponca City
ARRENDELL, C. W. ..... Ponca City
BARKER, W. JACKSON ..... Ponca City
BEATTY, J. H. ..... Tonkawa
BECKER, L. H. ..... Blackwell
BROWNE, H. S. ..... Ponca City
CLIFT, M. C. ..... Blackwell
CURRY, JOHN R. ..... Blackwell
GHORMLEY, J. G. ..... Blackwell
GIBSON, R. B. ..... Ponca City
GORDON, D. M. ..... Ponca City
GOWEY, H. O. ..... Newkirk
HOWE, J. H. ..... Ponca City
HUDSON, J. O. ..... Braman
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MOORE, G. C. ..... Ponca City
MORGAN, L. S. ..... Ponca City
NEAL, L. G. ..... Ponca City
NIEMANN, G. H. ..... Ponca City
NORTHCUTT, C. E. ..... Ponca City
NUCKOLS, A. S. ..... Ponca City
OBERMILLER, R. G. ..... Ponca City
PETERS, M. L. ..... Blackwell
REDING, A. C. ..... Ponca City
RISSER, A. S. ..... Blackwell
SANGER, W. W. ..... Ponca City
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WAGNER, J. C. ..... Ponca City
WALKER, I. D. ..... Tonkawa
WHITE, M. S. ..... Blackwell
WRIGHT, L. I. ..... Blackwell
YEARY, G. H. ..... Newkirk

KINGFISHER

ANGLIN, J. T. ..... Dover
DIXON, A. ..... Hennessey
HODGSON, C. M. ..... Kingfisher
LATTIMORE, F. C. ..... Kingfisher
STURGEON, H. VIOLET ..... Hennessey
TAYLOR, J. R. ..... Kingfisher

KIOWA

ADAMS, J. L. ..... Hobart
ADAMS, RICHARD ..... Hobart
ANDERSON, H. R. ..... Mountain View
BONHAM, J. M. ..... Hobart
BRAUN, J. P. ..... Hobart
FINCH, J. WM. ..... Sentinel
HATHAWAY, A. H. ..... Mountain View
LAND, J. A. ..... Hobart
MARTIN, F. F. ..... Roosevelt
MOORE, J. H. ..... Hobart
PIERSON, DWIGHT D. ..... Hobart
WALKER, F. E. ..... Lone Wolf
WATKINS, B. H. ..... Hobart

LE FLORE

BAKER, F. P. ..... Talihina
BOOTH, G. R. ..... LeFlore
COLLINS, E. L. ..... Panama
DEAN, S. C. ..... Howe
GILLIAM, W. C. ..... Spiro
HARTSHORNE, G. E. ..... Spiro
HEAD, W. M. ..... Talihina
JONES, L. D. ..... Talihina
LINGINFELTER, PAUL ..... Talihina
MINOR, R. M. ..... Williams
SHIPPEY, W. L. ..... Poteau
SKIMP, FRANK S ..... Talihina
VAN CLEVE, WM. ..... Talihina
WOODSON, E. M. ..... Poteau
WOODSON, O. M. ..... Poteau
WRIGHT, R. L. ..... Poteau

LINCOLN

ADAMS, J. W. ..... Chandler
BAILEY, C. H. ..... Stroud
BAIRD, W. D. ..... Prague
BROWN, F. C. ..... Sparks
BURLESON, NED ..... Prague
DAVIS, W. B. ..... Stroud
ERWIN, PARA F. ..... Prague
JENKINS, H. B. ..... Tryon
MARSHALL, A. M. ..... Chandler
NICKELL, U. E. ..... Davenport
NORWOOD, F. H. ..... Prague
ROBERTSON, C. W. ..... Chandler
ROLLINS, J. S. ..... Prague

LOGAN

ALLEN, ROBT. ..... Guthrie
BARKER, C. B. ..... Guthrie
BARKER, E. O. ..... Guthrie
BARKER, PAULINE ..... Guthrie
BUSSEY, H. N. ..... Mulhall
CORNWELL, N. L. ..... Coyle
DRESBACH, H. V. ..... Mulhall
FIRST, F. R. ..... Crescent
GARDNER, P. B. ..... Marshall
GOODRICH, E. E. ..... Crescent
GRAY, DAN ..... Guthrie
HAHN, L. A. ..... Guthrie

HILL, C. B. ..... Guthrie
LARKIN, W. H. ..... Minco
LE HEW, Jr., J. L. ..... Guthrie
MILLER, WM. C. ..... Guthrie
PETTY, C. S. ..... Guthrie
PETTY, JAMES ..... Guthrie
RINGROSE, R. F. ..... Guthrie
RITZHAUPT, L. H. ..... Guthrie
SOUTER, J. E. ..... Guthrie
TRIGG, F. E. ..... Guthrie
WEST, A. A. ..... Guthrie

MAJOR

CAMPBELL, JOHN D. ..... Fairview
SPECHT, ELSIE ..... Fairview

MARSHALL

HOLLAND, J. L. ..... Madill
LOGAN, J. H. ..... Lebanon
YORK, J. P. ..... Madill

MAYES

HACKLER, H. W. ..... Pryor
HERRINGTON, V. D. ..... Pryor
HOLLINGSWORTH, J. E. ..... Strang
MORROW, B. L. ..... Saline
PUCKETT, CARL ..... 22 W. Sixth, Oklahoma City
WERLING, E. H. ..... Pryor
WHITAKER, W. J. ..... Pryor
WHITE, L. C. ..... Adair

McCLAIN

COCHRANE, J. E. ..... Byars
DAWSON, O. O. ..... Wayne
KOLB, I. N. ..... Blanchard
McCURDY, W. C. ..... Purcell
ROYSTER, R. L. ..... Purcell

McCURTAIN

BARKER, N. L. ..... Broken Bow
CLARKSON, A. W. ..... Valliant
MORELAND, J. T. ..... Idabel
MORELAND, W. A. ..... Idabel
OLIVER, R. B. ..... Idabel
SHERRILL, R. H. ..... Broken Bow
WILLIAMS, R. D. ..... Idabel

McINTOSH

JACOBS, L. I. ..... Hanna
LITTLE, D. E. ..... Eufaula
TOLLESON, W. A. ..... Eufaula
WOOD, JAS. L. ..... Eufaula

MURRAY

ANADOWN, P. V. ..... Sulphur
BAILEY, H. C. ..... Sulphur
BROWN, BYRON B. ..... Davis
BURKE, RICHARD M. ..... Sulphur
LUSTER, J. C. ..... Davis
SADLER, F. E. ..... Sulphur
SHIVERS, E. E. ..... Davis
SLOVER, GEO. ..... Sulphur
SPROUSE, O. W. ..... Sulphur

MUSKOGEE

BALLANTINE, H. T. ..... Surety Bldg.
BERRY, W. D. ..... Barnes Bldg.
BLAKEMORE, J. L. ..... Barnes Bldg.
BRUTON, L. D. ..... Commercial Natl. Bldg.
CAMPBELL, J. F. ..... Barnes Bldg.
COACHMAN, E. H. ..... Manhattan Bldg.
DE GROOT, C. E. ..... Manhattan Bldg.
DONNELL, R. N. ..... Raymond Bldg.
DORWART, F. G. ..... Barnes Bldg.
EWING, F. W. ..... Surety Bldg.
FITE, E. H. ..... Barnes Bldg.
FITE, W. P. ..... Barnes Bldg.
FRYER, S. J. ..... Surety Bldg.
FULLENWIDER, C. M. ..... Barnes Bldg.
HAMM, S. G. ..... Haskell
HOLCOMB, R. N. ..... Surety Bldg.
JOBLIN, W. R. ..... Porter
KAISER, GEO. L. ..... Checotah
KLASS, O. C. ..... Surety Bldg.
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MATHEWS, G. F. ..... Tahlequah
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NOBLE

CAVITT, R. A. ..... Morrison
COOKE, C. H. ..... Perry
DRIVER, J. W. ..... Perry
EATON, F. C. ..... Perry
EVANS, A. M. ..... Perry
FRANCIS, J. W. ..... Perry
RENFROW, T. F. ..... Billings

NOWATA

LANG, S. A. ..... Nowata
PRENTISS, H. M. ..... Nowata
ROBERTS, S. P. ..... Nowata
SCOTT, M. B. ..... Delaware
SUDDERTH, J. P. ..... Nowata

OKFUSKEE

BARTOW, A. C. ..... Okfuskee
BLOSS, C. M. ..... Okemah
BOMBARGER, C. C. ..... Paden
BRICE, M. O. ..... Okemah
COCHRAN, C. M. ..... Okemah
JENKENS, W. P. ..... Okemah
KENNEDY, J. A. ..... Okemah
KEYES, ROBERT ..... Wewoka
LUCAS, A. C. ..... Castle
MELTON, A. S. ..... Okemah
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CHARNEY, L. H. ..... Medical Arts Bldg.
CLARK, ANSON L. ..... Medical Arts Bldg.
CLOUDMAN, H. H. ..... Medical Arts Bldg.
CLYMER, CYRIL E. ..... Medical Arts Bldg.
COLEY, A. J. ..... Hightower Bldg.
COLLINS, H. D. ..... Medical Arts Bldg.
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HALL, CLARK H. ..... Medical Arts Bldg.
HANEY, A. H. ..... Perrine Bldg.
HAMMONDS, O. O. ..... 623 North East 18th St.
HARBISON, FRANK ..... Terminal Bldg.
HARBISON, J. E. ..... Terminal Bldg.
HARRIS, H. W. ..... 1200 North Walker
HASKETT, PAUL E. ..... Hales Bldg.
HATCHETT, J. A. ..... Medical Arts Bldg.
HAYES, BASIL A. ..... 625 North West 10th St.
HAYGOOD, CHAS. W. ..... Municipal Bldg.
HAZEL, O. G. ..... Medical Arts Bldg.
HEATLEY, JOHN E. ..... Medical Arts Bldg.
HEFFERNON, GEO. A. ..... 610 West Ninth St.
HENDERSON, JESSE L. ..... 119 North Broadway
HERMANN, JESS ..... Medical Arts Bldg.
HETHERINGTON, A. J. ..... 2014 Gatewood Ave.
HICKS, F. B. ..... Medical Arts Bldg.
HIRSHFIELD, A. C. ..... Medical Arts Bldg.
HOLLIDAY, J. R. ..... 1200 North Walker
HOOD, F. REDDING ..... 1200 North Walker
HOOT, M. P. ..... 301 West 12th St.
HOWARD, R M. ..... Osler Bldg.
HUGGINS, J. R. ..... City Hall Bldg.
HULL, WAYNE M. ..... 800 North East 13th St.
HUNTER, GEO. ..... Wewoka
HYROOP, GILBERT L. ..... Medical Arts Bldg.
ISHMAEL, WM. K. ..... 717 North Robinson
JACKSON, A. R. ..... 2528½ South Robinson
JACOBS, MINARD F. ..... Medical Arts Bldg.
JANCO, LEON ..... 10 West Park Place
JETER, HUGH ..... 1200 North Walker
JOBE, VIRGIL R. ..... 717 North Robinson
JOLLY, W. J. ..... 614 West 14th St.
JONES, HUGH ..... Medical Arts Bldg.
KELLER, W. F. ..... Medical Arts Bldg.
KELSO, JOSEPH W. ..... Medical Arts Bldg.
KELTZ, BERT F. ..... Medical Arts Bldg.
KERNODLE, S. E. ..... First Natl. Bldg.
KIMBALL, G. H. ..... Medical Arts Bldg.
KUHN, JOHN F. ..... Medical Arts Bldg.
KUHN, Jr., JOHN F. ..... Medical Arts Bldg.
LACHMANN, ERNST ..... 801 East 13th St.
LAIN, E. S. ..... Medical Arts Bldg.
LAMB, JOHN H. ..... Medical Arts Bldg.
LAMBKE, PHIL M. ..... 605 North East 28th St.
LA MOTTE, GEORGE A. ..... Colcord Bldg.
LANE, L. C. ..... 311½ North West Ninth St.
LANGSFORD, WM. ..... 323 North East 11th St.
LANGSTON, WANN ..... Medical Arts Bldg.
LAWSON, PAT ..... 818 North West 11th St.
LEE, CLARENCE E. ..... Hightower Bldg.
LEMON, CECIL W. ..... Medical Arts Bldg.
LENEY, FANNIE LOU BRITTAIN ..... 400 West 10th
LEONARD, C. E. ..... 917 N. W. 34th St.
LEWIS, A. R. ..... Hightower Bldg.
LINDSTROM, W. C. ..... Medical Arts Bldg.
LINGENFELTER, F. M. ..... 1200 North Walker
LITTLE, JOHN R. ..... Ramsey Tower
LONG, LEROY ..... Medical Arts Bldg.
LONG, LEROY D. ..... Medical Arts Bldg.
LONG, ROSS D. ..... 617 West 14th St.
LONG, WENDELL ..... Medical Arts Bldg.
LOWRY, DICK ..... 1200 North Walker
LOWRY, TOM ..... 1200 North Walker
LOY, C. P. ..... Perrine Bldg.
LUTON, JAMES P. ..... Medical Arts Bldg.
LYON, J. I. ..... Edmond
MacDONALD, J. C. ..... 300 West Twelfth St.
MARGO, E. ..... 717 North Robinson St.
MARTIN, J. T. ..... 1200 North Walker
MARTIN, HOWARD ..... Ramsey Tower
McBRIDE, Earl D. ..... 717 North Robinson

McCABE, R. S. ..... Medical Arts Bldg.
McGEE, J. P. ..... 404 Osler Bldg.
McHENRY, D. D. ..... 508 North West 15th St.
McHENRY, L. C. ..... Medical Arts Bldg.
McKINNEY, MILAM ..... Medical Arts Bldg.
McNEILL, PHIL M. ..... Medical Arts Bldg.
MECHLING, GEO. S. ..... Osler Bldg.
MESSENBAUGH, J. F. ..... Colcord Bldg.
MILES, W. H. ..... City Hall Bldg.
MILLER, N. L. ..... Medical Arts Bldg.
MILLS, R. C. ..... City Hall Bldg.
MOFFITT, JOHN A. ..... University Hospital
MOORE, ELLIS ..... Medical Arts Bldg.
MOORE, C. D. ..... Perrine Bldg.
MOOR, H. D. ..... 800 East Thirteenth St.
MOORMAN, FLOYD ..... 1200 North Walker
MOORMAN, L. J. ..... 1200 North Walker
MORGAN, C. A. ..... First Natl. Bldg.
MORLEDGE, WALKER ..... Osler Bldg.
MORRISON, H. C. ..... 807 North West 23rd St.
MULVEY, BERT M. ..... Medical Arts Bldg.
MURDOCH, R. L. ..... Medical Arts Bldg.
MUSICK, ELMER R. ..... Medical Arts Bldg.
MUSICK, V. H. ..... Medical Arts Bldg.
MUSSIL, W. M. ..... Medical Arts Bldg.
MYERS, RALPH E. ..... 1200 North Walker
NAGLE, PATRICK ..... Medical Arts Bldg.
NICHOLSON, B. H. ..... 300 West Twelfth St.
NIELSEN, GERTRUDE ..... 1200 North Walker
NOELL, ROBT. L. ..... Medical Arts Bldg.
O'DONOGHUE, D. H. ..... Medical Arts Bldg.
PADBERG, J. W. ..... 1800 North West 16th St.
PATTERSON, ROBT. U. ..... 801 North East 13th St.
PAULUS, D. D. ..... 301 West Twelfth St.
PAYTE, J. I. ..... Osler Bldg.
PENICK, GRIDER ..... Colcord Bldg.
PHELPS, A. S. ..... Medical Arts Bldg.
PINE, JOHN S. ..... Medical Arts Bldg.
POSTELLE, J. M. ..... Medical Arts Bldg.
POUNDERS, CARROLL M. ..... 1200 North Walker
PRICE, J. S. ..... 1200 North Walker
RECK, J. A. ..... Colcord Bldg.
REED, EMIL P. ..... 1200 North Walker
REED, HORACE, ... Osler Bldg.
REED, JAMES ROBERT ..... Medical Arts Bldg.
REICHMAN, RUTH S. ..... 124 North West 15th St.
RIELY, LEA A. ..... Medical Arts Bldg.
RILEY, J. W. ..... 119 West Fifth St.
ROBINSON, J. H. ..... 301 West Twelfth St.
RODDY, JOHN A. ..... Ramsey Tower
ROGERS, GERALD ..... Osler Bldg.
ROSENBERGER, F. E. ..... Perrine Bldg.
ROUNTREE, C. R. ..... 1200 North Walker
RUCKS, Jr., W. W. ..... 300 West Twelfth St.
RUCKS, W. W. ..... 300 West Twelfth St.
SADLER, LEROY H. ..... Osler Bldg.
SANGER, F. A. ..... Key Bldg.
SANGER, F. M. ..... Key Bldg.
SANGER, WINNIE M. ..... Key Bldg.
SERWER, MILTON ..... 1200 North Walker
SEWELL, DAN R. ..... 400 North West Tenth St.
SEYLER, L. EVERETT ..... 1200 North Walker
SHELTON, J. W. ..... Medical Arts Bldg.
SHEPPARD, MARY V. S. ..... 1200 North Walker
SHORBE, HOWARD B. ..... Medical Arts Bldg.
SMITH, CHAS. A. ..... Medical Arts Bldg.
SMITH, D. G. ..... First National Bank Bldg.
SMITH, RALPH A. ..... 443½ North West 23rd St.
SNOW, J. B. ..... 1200 North Walker
STANBRO, GEO. E. ..... Medical Arts Bldg.
STARRY, L. J. ..... 1200 North Walker
STILWELL, ROBT. J. ..... American Natl. Bldg.
STONE, S. N. ..... Edmond
STOUT, M. E. ..... 209 West Thirteenth St.
STRADER, E. S. ..... Hightower Bldg.
STROTHER, S. P. ..... 120 North West 23rd St.
SULLIVAN, ELIJAH S. ..... Medical Arts Bldg.
SULLIVAN, ERNEST ..... Hightower Bldg.
TABOR, GEO. R. ..... First National Bank
TAYLOR, C. B. ..... Medical Arts Bldg.
TAYLOR, W. M. ..... 1200 North Walker
THOMPSON, W. J. ..... Medical Arts Bldg.
TOOL, DONOVAN ..... Edmond
TOWNSEND, CARY ..... Medical Arts Bldg.
TURNER, HENRY H. ..... 1200 North Walker
UNDERWOOD, E. L. ..... Hales Bldg.
VALBERG, ERNEST ..... Perrine Bldg.
VON WEDEL, CURT ..... 610 N. W. 9th St.
WAILS, T. G. ..... Medical Arts Bldg.
WARMACK, J. C. ..... 200 North West 16th St.
WATSON, I. N. ..... Edmond
WATSON, O. ALTON ..... 400 N. W. Tenth St.
WATSON, R. D. ..... Britton
WEIR, MARSHALL W. ..... Ramsey Tower
WELLS, EVA ..... Medical Arts Bldg.
WELLS, WALTER W. ..... Medical Arts Bldg.
WEST, W. K. ..... 1200 North Walker
WESTFALL, L. M. ..... Medical Arts Bldg.
WHITE, ARTHUR W. ..... Medical Arts Bldg.
WHITE, OSCAR ..... 1200 North Walker
WHITE, PHIL E. ..... Perrine Bldg.
WILDMAN, S. F. ..... Medical Arts Bldg.
WILKINS, HARRY ..... Medical Arts Bldg.
WILLIAMS, L. C. ..... Osler Bldg.
WILLIAMSON, W. H. ..... Hightower Bldg.
WILSON, KENNETH J. ..... Medical Arts Bldg.
WOLFF, J. P. ..... Osler Bldg.
WOODWARD, NEIL W. ..... 1200 North Walker
WRIGHT, HARPER ..... 240 West Commerce
YOUNG, A. M. ..... Medical Arts Bldg.

OKMULGEE

ALEXANDER, LIN ..... Okmulgee
ALEXANDER, ROBT. L. ..... Okmulgee
BOLLINGER, I. W. ..... Henryetta
BOSWELL, H. D. ..... Henryetta
CARLOSS, T. C. ..... Morris
CARNELL, M. D. ..... Okmulgee
DIVINE, DUKE G. ..... Wagoner
EDWARDS, J. G. ..... Okmulgee
GLISMANN, M. B. ..... Okmulgee
HOLMES, A. R. ..... Henryetta
HUDSON, W. S. ..... Okmulgee
KILPATRICK, G. A. ..... Henryetta
LESLIE, S. B. ..... Okmulgee
MABEN, CHAS. S. ..... Okmulgee
MATHENEY, J. C. ..... Okmulgee
McKINNEY, G. Y. ..... Henryetta
MING, C. M. ..... Okmulgee
MITCHENER, W. C. ..... Okmulgee
NELSON, J. P. ..... Beggs
RAINS, H. L. ..... Okmulgee
RANDEL, D. M. ..... Okmulgee
RANDELL, H. O. ..... Okmulgee
RODDA, E. D. ..... Okmulgee
ROGERS, G. A. ..... CCC Camp, Okmulgee
SIMPSON, N. N. ..... Henryetta
STARK, W. W. ..... Fort Gibson
TORRANCE, L. B. ..... Okmulgee
VERNON, W. C. ..... Okmulgee
WALLACE, V M. ..... Morris
WATSON, F. S. ..... Okmulgee

OSAGE

AARON, W. H. ..... Pawhuska
ALEXANDER, EVERETT T. ..... Barnsdall
BAYLOR, R. A. ..... Fairfax
DALY, J. F. ..... Pawhuska
DOZIER, B. E. ..... Snidler
GOVAN, T. P. ..... Pawhuska
GUILD, C. H. ..... Shidler
HEMPHILL, G. K. ..... Pawhuska
HEMPHILL, P. H. ..... Pawhuska

KARASEK, M. ..... Shidler
LIPE, E. N. ..... Fairfax
LOGAN, C. K. ..... Hominy
RAGAN, T. A. ..... Fairfax
RUST, M. E. ..... Pawhuska
SMITH, R. O. ..... Hominy
SULLIVAN, B. F. ..... Barnsdall
WALKER, G. I. ..... Hominy
WALKER, ROSCOE ..... Pawnuska
WEIRICH, C. R. ..... Pawhuska
WILLIAMS, CLAUD W. ..... Pawhuska
WORTEN, D. ..... Pawhuska

OTTAWA

AISENSTADT, E. ALBERT ..... Picher
BARRY, J. R. ..... Picher
BUTLER, V. V. ..... Picher
CANNON, R. F. ..... Miami
CHESNUT, W. G. ..... Miami
COLVERT, G. W. ..... Miami
CONNELL, MATT ..... Picher
COOTER, A. M. ..... Miami
CRAIG, J. W. ..... Miami
DeARMAN, M. M. ..... Miami
DeTAR, G. A. ..... Miami
DOLAN, W. M. ..... Picher
HAMPTON, J. B. ..... Commerce
HUGHES, A. R. ..... Wyandotte
JACOBY, J. S. ..... Commerce
KERR, W. C. ..... Picher
LANNING, J. M. ..... 878 Carson St., Memphis, Tenn.
LIGHTFOOT, J. B. ..... Miami
McKAY, ED. D. ..... Miami
McNAUGHTON, G. P. ..... Miami
MILLER, H. K. ..... Fairland
RALSTON, B. W. ..... Commerce
RITCHEY, H. C. ..... Picher
RUSSELL, RICHARD ..... Picher
SHELTON, B. W. ..... Miami
SAYLES, W. JACKSON ..... Miami
SMITH, W. B. ..... Fairland
WORMINGTON, F. L. ..... Miami

PAWNEE

BARBOUR, L. C. ..... Ralston
BEITMEN, C. E. ..... Kendrick
BROWNING, R. L. ..... Pawnee
HADDOX, C. H ..... Pawnee
HETHERINGTON, L. P. ..... Pawnee
JONES, R. E. ..... Pawnee
LeHEW, ELTON W. ..... Pawnee
LeHEW, J. L. ..... Pawnee
ROBINSON, E. T. ..... Cleveland
SADDORIS, M. L. ..... Cleveland
SPALDING, H. B. ..... Ralston

PAYNE

ADAMS, JAMES E. ..... Cushing
BASSETT, C. M. ..... Cushing
CLEVERDON, L. A. ..... Stillwater
DAVIS, BENJ. ..... Cushing
FRY, POWELL E. ..... Stillwater
GROW, MAX H. ..... Stillwater
HACKLER, JOHN W. ..... Stillwater
HARRIS, E. M. ..... Cushing
HERRINGTON, D. J ..... Cushing
HOLBROOK, R. W. ..... Perkins
LEATHEROCK, R. E. ..... Cushing
MANNING, H. C. ..... Cushing
MARTIN, EMMETT O. ..... Cushing
MARTIN, JOHN P. ..... Stillwater
MARTIN, J. W. ..... Cushing
MITCHELL, L. A. ..... Stillwater
PHILLIPS, J. W. ..... Oilton
RICHARDSON, P. M. ..... Cushing
ROBERTS, R. E. ..... Stillwater
SMITH, A. B. ..... Stillwater
STRAHN, EVA ..... Stillwater
WAGGONER, ROY E. ..... Stillwater
WALTRIP, J. R. ..... Yale
WILHITE, L. R. ..... Perkins

PITTSBURG

BARTHELD, F. T. ..... McAlester
BAUM, F. J. ..... McAlester
BRONSON, C. J. ..... McAlester
BUNN, A. D. ..... Savanna
DORROUGH, JOE ..... McAlester
GEORGE, L. J. ..... Stuart
GREENBERGER, E. D. ..... McAlester
KIES, B. B. ..... CCC Camp, Checotah
KILPATRICK, G. A. ..... McAlester
KLOTZ, W. F. ..... McAlester
KUYRKENDALL, L. C. ..... McAlester
LIVELY, CLAUDE E. ..... McAlester
McCARLEY, T. H. ..... McAlester
McFADDEN, C. A. ..... CCC Camp, Wilburton
MILLS, CHAS. K. ..... McAlester
MUNN, J. A. ..... McAlester
NORRIS, T. T. ..... Krebs
PARK, J. F. ..... McAlester
PEARCE, C. M., State Capitol Bldg., Oklahoma City
PEMBERTON, R. K. ..... McAlester
RAMSEY, W. G. ..... Quinton
RICE, O. W. ..... McAlester
RUSSELL, ALLEN R. ..... McAlester
SAMES, W. W. ..... Hartshorne
SHULLER, E. H. ..... McAlester
THOMAS, ERNEST ..... McAlester
WELCH, A. J. ..... McAlester
WILLIAMS, C. O. ..... McAlester
WILLOUR, L. S. ..... McAlester
WILSON, HERBERT A. ..... McAlester

PONTOTOC

BRECO, J. G. ..... Ada
BRYDIA, CATHERINE ..... Ada
BURROWS, L. I. ..... Ada
CANADA, E. A. ..... Ada
CRAIG, JOHN R. ..... Ada
COWLING, ROBT. E. ..... Ada
CUMMINGS, ISHAM L. ..... Ada
DEAN, W. F. ..... Ada
FRY, MELVIN ..... Stonewall
GULLATT, E. M. ..... Ada
HINES, SIDNEY, J. T. ..... Fittstown
LANE, WILSON H. ..... Ada
LEWIS, E. F. ..... Ada
LEWIS, MILES L. ..... Ada
McKEEL, SAM A. ..... Ada
McNEW, M. C. ..... Ada
MILLER, OSCAR H. ..... Ada
MOREY, JOHN B. ..... Ada
NEEDHAM, C. F. ..... Ada
PETERSON, WM. G. ..... Ada
ROSS, SAMUEL P. ..... Ada
RUTLEDGE, JAS. A. ..... Ada
SEABORN, T. L. ..... Roff
SUGG, ALFRED R. ..... Ada
WEBSTER, M. M. ..... Ada
WELBORN, ORANGE E. ..... Ada
YATES, JUNE ..... Ada

POTTAWATOMIE

ANDERSON, R. M. ..... Shawnee
APPLEWHITE, G. H. ..... Shawnee
BAKER, M. A. ..... Shawnee
BALL, W. A. ..... Wanette
BYRUM, J. M. ..... Shawnee

CAMPBELL, H. G. ..... St. Louis, Okla.
CARSON, F. L. ..... Shawnee
CORDELL, U. S. ..... McComb
CULLUM, J. E. ..... Earlsboro
FORTSON, J. L. ..... Tecumseh
GALLAHER, F. C. ..... 231 W. Washington, Chicago
GALLAHER, W. M. ..... Shawnee
GASTON, JOHN I. ..... Shawnee
GILLICK, D. W. ..... Shawnee
HUGHES, H. E. ..... Shawnee
HUGHES, J. E. ..... Shawnee
KAYLOR, R. C. ..... McCloud
KEEN, FRANK M. ..... Shawnee
MATTHEWS, W. F. ..... Tecumseh
McADAMS-WILLIAMS, ALPHA ..... Shawnee
NEWLIN, FRANCES P. ..... Shawnee
PARAMORE, C. P. ..... Shawnee
RICE, E. E. ..... Shawnee
ROWLAND, T. D. ..... Shawnee
ROYSTER, J. H. ..... Wanette
STEVENS, WALTER S., 315 P. O. Bldg., Okla. City
STOOKSBURY, J. M. ..... Shawnee
WALKER, J. A. ..... Shawnee
WILLIAMS, A. J. ..... McLoud

PUSHMATAHA

CONNALLY, D. W. ..... Antlers
GUINN, E. ..... Antlers
HUCKABAY, B. M. ..... Greenville, Tex.
LAWSON, JOHN S. ..... Antlers
PATTERSON, E. S. ..... Antlers

ROGERS

ANDERSON, F. A. ..... Claremore
ANDERSON, P. S. ..... Claremore
ANDERSON, W. D. ..... Claremore
BASSMAN, CAROLINE ..... Claremore
BESON, C. W. ..... Claremore
BIGLER, EARL E. ..... Claremore
BUSHYHEAD, J. C. ..... Claremore
COLLINS, B. F. ..... Claremore
HOWARD, W. A. ..... Chelsea
JENNINGS, K. D. ..... Chelsea
MELOY, R. C. ..... Claremore
NELSON, D. C. ..... Claremore

SEMINOLE

BRIGGS, T. H. ..... Wewoka
CHAMBERS, C. S. ..... Seminole
DAVIS, JOHN ..... Seminole
DEATON, A. N. ..... Wewoka
GIESEN, A. F. ..... Konawa
GRIMES, J. P. ..... Wewoka
HUDDLESTON, W. A. ..... Konawa
JONES, W. E. ..... Seminole
KILES, H. A. ..... Konawa
KNIGHT, W. L. ..... Wewoka
LONG, W. J. ..... Konawa
LYONS, D. J. ..... Seminole
MARTIN, W. S. ..... Wewoka
MILLS, N. W. ..... Seminole
MOSHER, D. D. ..... Seminole
PACE, L. R. ..... Seminole
PRICE, J. T. ..... Seminole
REEDER, H. M. ..... Konowa
STEPHENS, A. B. ..... Seminole
STEVENS, C. ..... Seminole
THROGMORTON, H. B. ..... Seminole
TURLINGTON, M. M. ..... Seminole
VAN SANDT, G. B. ..... Wewoka
VAN SANDT, M. M. ..... Wewoka
WALKER, A. A. ..... Wewoka
WARE, T. H. ..... Seminole
WHITE, J. H. ..... Wewoka
WHITTLE, C. C. ..... 234 W. First Ave., Mesa, Ariz.
WRIGHT, P. E. ..... Sasakwa

SEQUOYAH

CHEEK, J. A. ..... Sallisaw
MORROW, J. A. ..... Sallisaw

STEPHENS

CARMICHAEL, J. B. ..... Duncan
COKER, JOHN K. ..... Duncan
DOWNING, G. G. ..... Marlow
HARGROVE, FRED T. ..... Duncan
HARRISON, C. M. ..... Comanche
IVY, W. S. ..... Duncan
KING, E. G. ..... Duncan
LINDLEY, E. C. ..... Duncan
McCLAIN, W. Z. ..... Marlow
McMAHAN, A. M. ..... Duncan
PATTERSON, J. L. ..... Duncan
PRUITT, C. C. ..... Comanche
RICHARDSON, R. W. ..... Duncan
SALMON, W. T. ..... Duncan
SMITH, L. P. ..... Marlow
TALLEY, C. N. ..... Marlow
THOMASON, E. B. ..... Marlow
WEEDN, Jr., A. J. ..... Duncan
WILLIAMSON, S. H. ..... Duncan

TEXAS

BLUE, JOHNNY A. ..... Guymon
HAYES, R. B. ..... Guymon
LEE, DANIEL S. ..... Guymon
REED, PAUL ..... 1932 New Hamphire, Hollywood, California
SMITH, MORRIS ..... Guymon

TILLMAN

ALLEN, C. C. ..... Frederick
ARRINGTON, J. E. ..... Frederick
BACON, O. G. ..... Frederick
BOX, O. H. ..... Grandfield
CHILDERS, J. E. ..... Tipton
DAVIS, W. ..... Davidson
FISHER, R. L. ..... Frederick
FUQUE, W. A. ..... Grandfield
OSBORN, JR., JAMES D. ..... Frederick
REYNOLDS, J. C. ..... Frederick
SPURGEON, T. F. ..... Frederick

TULSA

ALLEN, V. K. ..... 1001 Medical Arts Bldg.
ALLISON, T. P. ..... Sand Springs
ALSPACH, W. L. ..... Springer Clinic
ARMSTRONG, O. C. ..... 915 Medical Arts Bldg.
AMENT, C. M. ..... 305 Ritz Bldg.
ATCHLEY, R. Q. ..... 507 Medical Arts Bldg.
ATKINS, PAUL N. ..... 1011 Medical Arts Bldg.
BARHAM, J. H. ..... 314 New Daniel Bldg.
BEESLEY, W. W. ..... 501 Medical Arts Bldg.
BEYER, J. W. ..... 621 McBirney Bldg.
BILLINGTON, J. J. ..... 404 Medical Arts Bldg.
BLACK, HAROLD J. ..... 209 Medical Arts Bldg.
BOLTON, J. F. ..... 211 Medical Arts Bldg.
BRADFIELD, S. J. ..... 607 Medical Arts Bldg.
BRADLEY, C. E. ..... 202 Medical Arts Bldg.
BRANLEY, BERNARD L. ..... 315 Medical Arts Bldg.
BRASWELL, JAS. C. ..... 1109 Medical Arts Bldg.
BROGDEN, J. C. ..... 414-15 Medical Arts Bldg.
BROOKSHIRE, J. E. ..... 313 Ritz Bldg.
BROWNE, HENRY S. ..... 615 Medical Arts Bldg.
BRYAN, Jr., W. J. ..... 801 Medical Arts Bldg.
CALHOUN, C. E. ..... Sand Springs

CALHOUN, WALTER H. ..... 405 Daniels Bldg.
CALLAHAN, H. W. ..... 902 Medical Arts Bldg.
CAMPBELL, W. M. ..... 10½ North Lewis
CARNEY, A. B. ..... 402 Atlas Life Bldg.
CHALMERS, J. S. ..... Sand Springs
CHARBONNET, P. N. ..... 206 Medical Arts Bldg.
CHILDS, D. B. ..... 1226 South Boston
CHILDS, HENRY C. ..... 1226 South Boston
CHILDS, J. W. ..... 1226 South Boston
CLINTON, FRED S. ..... 823 Wright Bldg.
COHENOUR, E. L. ..... 1102 Medical Arts Bldg.
CLULOW, GEO. H. ..... 410 McBirney Bldg.
COOK, ALBERT W. ..... 1006 Medical Arts Bldg.
COULTER, T. B. ..... 1011 Medical Arts Bldg.
CRAWFORD, WM. S. ..... Nat'l Bank of Tulsa Bldg.
CRONK, FRED Y. ..... 801-05 Medical Arts Bldg.
DAILY, R. E. ..... Bixby
DAVIS, A. H. ..... 710 Medical Arts Bldg.
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